WENCK File #B5620-0084
March 2020

Part 71 Permit Renewal Application
Federal Permit to Operate No.: V-LL-2706100011-09-02

Great Lakes Gas Transmission Limited Partnership
Deer River Compressor Station No. 4 (CS4)
Itasca County, Minnesota

Prepared for:

Great Lakes Gas Transmission, LP

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Houston, TX 77002

TC Energy

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1.0 Technical Support Document

1.1 INTRODUCTION

Great Lakes Gas Transmission Company, as operator and agent for Great Lakes Gas Transmission Limited Partnership (GLGT) owns and operates several facilities in Minnesota that are used in natural gas transmission. GLGT operates a natural gas pipeline compressor station (Standard Industrial Classification code 4922) located approximately 2 miles west of Deer River, Itasca County, Minnesota. The Deer River Compressor Station No. 4 (Deer River Station) is located on privately owned fee land within the external boundaries of the Leech Lake Band of Ojibwe Reservation. The primary function of the Deer River Station is to provide motive force for natural gas flowing through the pipeline. The facility operates two natural gas-fired turbines, one natural gas-fired standby electrical generator, and one natural gas-fired boiler. Emission unit EU 001 is an Avon 101G natural gas-fired turbine installed in 1971 with a maximum ambient rating of 18,000 HP. Emission unit EU 002 is a General Electric LM 1600 natural gas-fired turbine installed in 1993 with a maximum ambient rating of 23,000 HP. Emission unit EU 003 is a Waukesha L36GL four-stroke rich burn natural gas-fired standby electrical generator installed in 1997 with a rated heat input of 7.2 MMBtu/hr and a horsepower rating of 899 HP. The facility operates additional equipment and performs additional activities considered to be insignificant, as detailed in Form IE included in Section 2.0 of this application. The pipeline system normally operates continuously but at varying loads, 24 hours per day, 365 days per year.

The Title V regulations established emission thresholds of 100 tons per year (tpy) for all criteria pollutants and 25 tpy for total Hazardous Air Pollutants (HAPs) or 10 tpy for an individual HAP to classify a stationary source as major. Deer River Station is considered a Title V Part 70 major source due to NOx and CO emissions in excess of the applicability thresholds. Deer River Station is not considered a major source of HAP emissions because the potential to emit of any single HAP and the potential to emit of all HAPs combined are both less than the thresholds.

The Deer River Station operates under Permit No. V-LL-2706100011-14-01 last issued by United States Environmental Protection Agency Region 5 on August 28, 2015. As noted in the Technical Support Document to the permit,

"In the late 1990s, EPA reviewed the status of sources located in Indian country. During this review it was determined that the Great Lakes CS #4 was located in Indian Country and was erroneously issued both construction and operating permits by the State of Minnesota. Since Minnesota does not have authority to issue permits to sources in Indian Country, all air quality construction and operating permits issued by the Minnesota Pollution Control Agency (MPCA) are considered invalid for purposes of satisfying federal requirements. On September 28, 2004, EPA issued a Title V operating permit in accordance with 40 C.F.R. Part 71 to correct this oversight and issue Great Lakes a valid Title V operating permit. That Part 71 operating permit included the federal regulations applicable to the facility and did not reference or incorporate any permit issued by the State of Minnesota."

Permit No. V-LL-2706100011-14-01 for the Deer River Station expires October 20, 2020. As required by Permit Condition 4.R.2 of the Operating Permit, GLGT is submitting this permit renewal application at least six calendar months prior to the date of expiration of the

permit, or prior to April 20, 2020. Therefore, according to 40 CFR §71.5(a)(1)(iii) and 40 CFR §71.7(b), this is considered a timely renewal application and the facility will be authorized to continue to operate until the permitting authority takes final action on this application. This Title V Air Permit renewal application is comprised of the following information:

- Section 1 consists of technical support documentation;
- Section 2 consists of the permit renewal application forms;
- Appendix A contains a printout of all supporting emission calculations;
- Appendix B contains the most recent FERC Gas Tariff demonstrating compliance with the EU 002 fuel sulfur content limit;
- Appendix C contains the most recent EU 003 engine maintenance records demonstrating compliance with 40 CFR 63 Subpart ZZZZ; and
- Appendix D contains the most recently submitted actual emissions of criteria and hazardous air pollutants, submitted in 2019 for year 2018.

1.2 FEDERAL AND STATE REGULATORY REVIEW

The Deer River Station is subject to a variety of federal and state air quality regulations that are discussed in this section.

1.2.1 Prevention of Significant Deterioration

The Prevention of Significant Deterioration (PSD) applicability is triggered by construction of a "major stationary source" or "major modification" to an existing major stationary source. PSD regulations in 40 CFR 52.21 define a major source as any source type (belonging to a list of 28 categories) that emits or has the potential to emit 100 tpy or more of any regulated pollutant under the CAA, or any other source type that emits or has the potential to emit such pollutants in amounts equal to or greater than 250 tpy [40 CFR 52.21 (b)(1)(i)]. The potential to emit is based on the maximum design capacity of a source, subject to federally enforceable permit limitations (e.g., limits on annual hours of operation) and considers pollution control efficiency.

The Deer River Station is considered a major PSD source according to 40 CFR 52.21. However, the Deer River Station was built prior to August 7, 1980, the date of applicability for PSD, and therefore did not require PSD review.

The installation of EU002 in 1993 as a replacement for the two Orenda gas generator units was not considered a significant modification to a PSD major stationary source because the replacement resulted in a non-significant net emissions increase to the major stationary source, as detailed in the Construction Permit Application. This was also confirmed by the Minnesota Pollution Control Agency (MPCA) in the issuance of Air Emission Facility Permit No. 365E-92-OT-1 on July 9, 1992. Because the installation of EU002 resulted in a non-significant net emissions increase to a major stationary source, EU002 is not subject to NSR.

1.2.2 New Source Performance Standards (NSPS)

NSPS contained in 40 CFR 60 require new, modified, or reconstructed sources to control emissions to the level achievable by the best demonstrated technology as specified in the relevant regulations. These NSPS regulations were reviewed to determine their applicability to the Deer River Station equipment or to confirm non-applicability as appropriate. The results of this review are summarized below by regulatory citation.

Table 1.2-1 NSPS Regulatory Review

Regulatory Citation	Non-Applicability Determination
40 CFR 60 Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	This standard is not applicable to the Deer River Station because there are no natural gas-fired boilers with a design heat input capacity of 2.9 MW (10 MMBtu/hr) or greater.
40 CFR 60 Subpart K - Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973 and prior to May 19, 1978	There are no petroleum storage vessels with capacity greater than 40,000 gallons at this facility. Therefore, this regulation is not applicable.

Regulatory Citation	Non-Applicability Determination
40 CFR 60 Subpart Ka - Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978 and prior to July 23, 1984	There are no petroleum storage vessels with capacity greater than 40,000 gallons at this facility. Therefore, this regulation is not applicable.
40 CFR 60 Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984	There are no volatile organic liquid storage vessels with capacity greater than 75 cubic meters at this facility. Therefore, this regulation is not applicable.
40 CFR 60 Subpart GG-Standards of Performance for Stationary Gas Turbines	This regulation is applicable to EU 002 because the unit is a stationary gas turbine with a heat input at peak load greater than or equal to 10 MMBtu/hr that has commenced construction, modification, or reconstruction after October 3, 1977. EU 002 was installed in 1993. EU 001 is greater than 10 MMBtu/hr, but it was installed in 1971, prior to October 3, 1977, and therefore this regulation is not applicable to EU 001.
40 CFR 60 Subpart KKK-Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants	This regulation is not applicable to the Deer River Station because the facility is not a natural gas processing plant as defined in the regulation.
40 CFR 60 Subpart LLL - Standards of Performance for Onshore Natural Gas Processing: SO_2 Emissions	The Deer River Station processes natural gas but does not operate a sweetening unit or a sulfur recovery unit. Therefore, this regulation is not applicable.
40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE)	The Deer River Station does not operate any stationary CI ICE; therefore, this regulation does not apply.
40 CFR 60 Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (SI ICE)	The engine at the Deer River Station was constructed prior to June 12, 2006 and has not been modified or reconstructed since June 12, 2006. Therefore, this regulation does not apply.
40 CFR 60 Subpart KKKK – Standards of Performance for Stationary Combustion Turbines	This regulation is not applicable to the Deer River Station because the combustion turbines have not been constructed, modified, or reconstructed after February 18, 2005. However, future modifications or reconstruction of the turbines may make them subject because the turbines are greater than 10 MMBtu/hr. The periodic replacement of stationary gas turbine components for overhaul or repair, does not subject the permittee to the requirements of Subpart KKKK unless the changes meet the definition of “modification” or “reconstruction”.

1.2.3 National Emission Standards for Hazardous Air Pollutants (NESHAP)

Federal NESHAP regulations promulgated pursuant to Section 112 of the CAA are found in 40 CFR Parts 61 and 63. In general, NESHAP, or Maximum Achievable Control Technology (MACT) standards apply to major stationary sources of HAP emissions, defined as potential-to-emit of 10 tons or more per year of any single HAP or 25 tons or more per year of any combination of HAP and minor stationary sources of HAP emissions (thresholds less than a major source). The Deer River Station is considered an area source of HAPs due to potential Formaldehyde emissions less than 10 tpy and potential total HAPs emissions less than 25 tpy. Potentially applicable NESHAPs are discussed below.

40 CFR 61 Subpart M - National Emission Standard for Asbestos

The Deer River Station may at times engage in demolition and/or renovation activities involving asbestos-containing materials (ACM). Therefore, the facility could be potentially subject to Subpart M, Standards for Demolition and Renovation (40 CFR 61.145). Procedures are in place to ensure the facility complies with these standards.

40 CFR 61 Subpart V - National Emission Standard for Equipment Leaks (Fugitive Emission Sources)

This regulation is not applicable to the Deer River Station because the provisions of this subpart apply to sources that are intended to operate in volatile hazardous air pollutant (VHAP) service. “In VHAP service means that a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 10 percent by weight a volatile hazardous air pollutant (VHAP) as determined according to the provisions of 61.245(d).” The Deer River Station processes do not have any sources that operate in VHAP service.

40 CFR 63 Subpart A – General Provisions

This regulation has general provisions that are referenced by other more specific NESHAP regulations.

40 CFR 63 Subpart HH - NESHAP from Oil and Natural Gas Production Facilities

This regulation is not applicable to the Deer River Station because the facility is a transmission facility and is not an oil and gas production facility as defined in this regulation.

40 CFR 63 Subpart HHH - NESHAP from Natural Gas Transmission and Storage Facilities

Subpart HHH establishes national emission limitations and operating limitations for natural gas transmission and storage facilities that are major sources of HAP emissions. The rule affects facilities that transport or store natural gas prior to entering the pipeline to a local distribution company or to a final user. The Deer River Station is a natural gas compression station but is an area source of HAP emissions and does not operate a glycol dehydration unit, which is the only ‘affected’ source under the regulation. Therefore, the Deer River Station is not subject to this regulation.

40 CFR 63 Subpart YYYY – NESHAP for Stationary Combustion Turbines

Subpart YYYY establishes national emission limitations and operating limitations for HAP emissions from stationary combustion turbines located at major sources of HAP emissions, and requirements to demonstrate initial and continuous compliance with the emission and operating limitations. The turbines at Deer River Station are existing units, constructed prior to January 14, 2003, but the station is an area source of HAP. Therefore, this regulation does not apply.

40 CFR 63 Subpart ZZZZ – NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE)

Subpart ZZZZ regulates HAP emissions from existing, new, and reconstructed stationary compression ignition (CI) and spark ignition (SI), emergency and non-emergency, RICE located at major and area sources of HAP emissions. This standard is potentially applicable to the Deer River Station because the facility operates one natural gas-fired electrical generator. The facility's 899 hp natural gas-fired standby electrical generator (EU 003) is an existing (installed in 1997) four-stroke rich-burn engine. As such, the rule imposes monitoring, recordkeeping, and maintenance requirements; however, there are no emission or operating limitations imposed by the regulation for emergency SI RICE greater than 500 hp. Some requirements for this regulation have already been incorporated into the permit. However, the maintenance requirements for the engine have not yet been included. The Deer River Station has complied with all Subpart ZZZZ requirements applicable to the engine. The I-COMP form included in Section 2.0 of this application lists all requirements applicable to the engine, including those that need to be added, and details how compliance has been demonstrated.

40 CFR 63 Subpart DDDDD – NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters

The Industrial/Commercial/Institutional Boilers and Process Heaters MACT for major sources was promulgated on March 21, 2011, and regulates HAP emissions from new and existing industrial, commercial, or institutional boilers and process heaters located at major sources of HAP emissions. The EPA subsequently issued a notice on May 18, 2011 to postpone the effective dates of the final rule until the completion of reconsideration or judicial review, whichever is earlier. On January 9, 2012, the EPA vacated the May 18, 2011 notice that delayed the effective dates of the Boiler MACT rule. The notice on final action on reconsideration was published in the Federal Register on January 31, 2013. This rule does not apply to Deer River Station because it is an area source of HAP emissions.

1.2.3.1 Subpart JJJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial and Institutional Boilers Area Sources

The Industrial/Commercial/Institutional Boilers and Process Heaters for area sources was promulgated on March 21, 2011, and regulates HAP emissions from industrial, commercial, or institutional boilers located at area sources of HAP emissions. This rule is potentially applicable to the 5.2 MMBtu/hr boiler located at Deer River Station, since the station is an area source of HAP. However, per §63.11237, the unit is classified as a gas-fired boiler because it burns only natural gas not combined with any solid fuels. As such, per

§63.11195(e), the boiler is “not subject to this subpart and to any requirements in this subpart”.

1.2.4 Compliance Assurance Monitoring (CAM)

Enhanced monitoring requirements have been adopted into 40 CFR 64. The enhanced monitoring requirements are referred to as Compliance Assurance Monitoring (CAM). CAM is applicable to sources that have a potential to emit in excess of major source thresholds, not considering “tailpipe” emission controls, and use an “active” control device to achieve compliance with the emission limit. Combustion controls may be considered in evaluating the potential to emit.

An emission unit is subject to CAM if all of the following criteria are satisfied:

- the unit is located at a major source that is required to obtain a Part 70 or Part 71 permit;
- the unit is subject to an emission limitation or standard for a regulated air pollutant;
- the unit uses an active control device to achieve compliance with any such emission limit or standard, and
- the unit has potential pre-controlled emissions of the applicable air pollutant above the major source threshold.

The potential emissions of NOx from each of the two natural gas-fired turbines, and potential emissions of CO from turbine EU 001, are in excess of the appropriate major source thresholds. EU 002 is subject to a NOx emission limitation of 196 ppmv NOx at 15% oxygen on a dry basis (Permit Condition 2.0(A.)1. of the Title V Operating Permit). However, neither of the turbines employ an active control device to control NOx or CO emissions. Therefore, the CAM rule does not apply to these units at this time.

1.2.5 Chemical Accident Prevention Provisions and Risk Management Plan

The Deer River Station is not subject to the Chemical Accident Prevention Provisions of 40 CFR Subpart 68. Applicability to this regulation is based on the type and quantity of certain regulated substances stored at a facility, and the Deer River Station does not exceed the applicability thresholds (40 CFR 68.10). The facility is not considered a stationary source under 40 CFR 68.3 (Chemical Accident Prevention) because it is regulated under 49 CFR 192, DOT.

1.2.6 Acid Rain Regulations

The Deer River Station is not subject to the federal acid rain regulations found in 40 CFR Parts 72 through 77 because Deer River Station does not own or operate an affected unit as defined in 40 CFR part 72.6.

1.2.7 40 CFR Part 71 Federal Operating Permit Program Rules

The following paragraphs discuss the general compliance with the 40 CFR Part 71 Federal Operating Permit Program Rules.

1.2.7.1 40 CFR 71.1-71.3 Program Overview, Definitions, and Sources Subject to Permitting Requirements

40 CFR 71.1 states that 40 CFR 71 sets forth the comprehensive federal air quality operating permits permitting program consistent with the requirements of title V of the Clean Air Act.

40 CFR 71.2 provides the definitions for the terms used throughout 40 CFR Part 71. This rule defines a "major source" as any stationary source that emits or, has the potential to emit, 10 tons per year of a single HAP, 25 tons per year of total HAPs or 100 tons per year or more of any regulated air pollutant, including NOx, VOC, and pollutants with promulgated NAAQS. Additionally, effective July 1, 2011, 40 CFR 71.2 subjects sources that emit 100,000 tons per year CO2e of greenhouse gases to the regulation.

40 CFR 71.3 requires any major stationary source of air pollutants, as defined in 40 CFR 71.2, to obtain a permit pursuant to 40 CFR Part 71.

The Deer River Station potentially emits concentrations of regulated air pollutants in excess of 100 tons per year. This facility was required to obtain a part 71 permit. A complete and timely application was originally submitted, and a part 71 operating permit was issued. This application is being submitted in order to renew this part 71 operating permit.

1.2.7.2 40 CFR 71.4-71.5 Program Implementation and Permit Applications

40 CFR 71.4 contains rules for when EPA will administer and enforce the Title V operating permit program. Among other scenarios, 40 CFR 71.4(b) states that EPA will administer and enforce the part 71 operating permit program in Indian country, as defined in 40 CFR 71.2, when no operating permit program meeting the requirements of 40 CFR Part 70 is in place. As there is no EPA-approved 40 CFR Part 70 operating program in the Deer River area, the Deer River Station is subject to the EPA-administered Part 71 operating program.
40 CFR 71.5 contains all requirements for permit applications, including identification of emissions sources and insignificant activities. All processes or process equipment at this facility have operation authorization included in the permit or qualify as an insignificant activity pursuant to 40 CFR 71.5(c)(11). Form IE in Section 2.0 lists all insignificant activities and insignificant emission levels at the Deer River Station. This form includes the Kewanee L3W125-G natural gas-fired boiler installed in 1993 and rated at 5.23 MMBtu/hr, currently identified as both EU 004 in Permit No. V-LL-2706100011-14-01 and identified as an insignificant activity pursuant to 40 CFR §71.5(c)(11)(i)(D) in the Technical Support Document to the permit, EPA Document ID: EPA-R05-OAR-2017-0029-0002. The boiler is used for comfort heating and therefore meets the definition of an insignificant activity in 40 CFR §71.5(c)(11)(i)(D). GLGT requests removal of all references to EU 004 in the permit.

The forms included in Section 2.0 and appendices included in this application provide all information required to be included in a part 71 permit application pursuant to 40 CFR 71.5.

1.2.7.3 40 CFR 71.6 Permit Content

Standard permit requirements included in all Part 71 permits are listed in 40 CFR 71.6(a). 40 CFR 71.6(a)(3) requires various monitoring, recordkeeping and reporting requirements included in Section 3.0, Facility-Wide Permit Requirements. Deer River Station must retain

records for at least five years, submit semi-annual monitoring reports to both EPA and the Leech Lake Band, promptly report deviations to both EPA and the Leech Lake Band, and provide adequate performance testing facilities. See the I-COMP form included in Section 2.0 for detail on compliance with this requirement of the Deer River Station. Furthermore, 40 CFR 71.6 permits and outlines the requirements of both off-permit changes and operational flexibility at all Part 71 sources.

1.2.7.4 40 CFR 71.7 Permit Issuance, Renewal, Reopenings and Revisions.

40 CFR 71.7 provides the procedures and requirements for the various types of permit modifications. Deer River Station will comply with these requirements should the station make a change requiring a permit modification.

1.2.7.5 40 CFR 71.8 Affected State Review

Pursuant to 40 CFR 71.8(d), EPA will provide a notice of all draft permits at the Deer River Station, including this requested permit renewal, to the Leech Lake Band of Ojibwe Reservation.

1.2.7.6 40 CFR 71.9 Permit Fees

Pursuant to 40 CFR 71.9(h), Part 71 sources are required to submit an annual emissions report of actual emissions for the preceding calendar year, fee calculation work sheet (based on the report), and full payment of the annual fee, by the anniversary date of the source's initial fee calculation work sheet, except that sources that were required to submit initial fee calculation work sheets between January 1 and March 31 inclusive shall submit subsequent annual emissions reports and fee calculation work sheets by April 1. As stated in Permit Condition 4.B.2, that date for the Deer River Station is November 15. See the I-COMP form included in Section 2.0 for detail on compliance with this requirement of the Deer River Station.

1.2.7.7 40 CFR 71.10-71.12 Delegation of Part 71 Program, Administrative Record, Public Participation, and Administrative Review, Prohibited Acts

40 CFR 71.10-71.12 contain rules that are administrative in nature and are not included as general conditions of Part 71 permits. These rules include timeline of draft and final permit issuance, including public comment period, and requirements of the administrative record.

1.3 PROPOSED CHANGES TO EXISTING TITLE V PERMIT

There have been no changes to the emission sources operating at the Deer River Compressor Station since the last permit issuance. As mentioned above in Section 1.2.3, it is requested that all NESHAP Subpart ZZZZ requirements applicable to the natural gas-fired standby electrical generator, EU 003, be added to the permit. All applicable requirements are identified on the I-COMP form included in Section 2.0 of this application. Additionally, as noted above in Section 1.2.7.2, GLGT requests removal of all references to EU 004 in the permit due to the unit qualifying as an insignificant activity pursuant to 40 CFR §71.5(c)(11)(i)(D).

1.4 SUMMARY

This document contains all the necessary elements for GLGT to meet the requirements for a complete Part 71 Operating Permit renewal application under the EPA rules and guidance. GLGT requests that this renewal application be reviewed, and a draft Part 71 Operating Permit be issued at the earliest convenience.

2.0 Application Forms

United States Environmental Protection Agency

OMB No. 2060-0336, Expires 11/30/2022

Federal Operating Permit Program (40 CFR Part 71)
GENERAL INFORMATION AND SUMMARY (GIS)

A. Mailing Address and Contact Information

Facility name Great Lakes Gas Transmission – Deer River Compressor Station No. 4

Mailing address: Street or P.O. Box N4956 Oak Crest Drive

City Bonduel State WI ZIP 54107

Contact person: Chris Waltman Title Senior Environmental Specialist

Telephone (715) 758 - 3341 Ext. _____

Facsimile Please call

B. Facility Location

Temporary source? ___Yes __X_No Plant site location 31641 Great Lakes Road

City Deer River State MN County Itasca EPA Region V

Is the facility located within:

Indian lands? __X_YES ___ NO An offshore source in federal waters? ___YES _X__ NO

Non-attainment area? ___ YES _X__NO If yes, for what air pollutants? _____

Within 50 miles of affected State? __ YES _X_ NO If yes, What State(s)? _____

C. Owner

Name Great Lakes Gas Transmission Limited Partnership Street/P.O. Box 5250 Corporate Drive

City Troy State MI ZIP 48098

Telephone (715) 758 - 3341 Ext_____

D. Operator

Name Great Lakes Gas Transmission Company Street/P.O. Box 5250 Corporate Drive

City Troy State MI ZIP 48098

Telephone (715) 758 - 3341 Ext_____

E. Application Type

Mark only one permit application type and answer the supplementary question appropriate for the type marked.

___Initial Permit _X__ Renewal ___ Significant Mod ___ Minor Permit Mod(MPM)

___ Group Processing, MPM ___ Administrative Amendment

For initial permits, when did operations commence? _____ /_____ /_____

For permit renewal, what is the expiration date of current permit? _10__/__20__/__2020___

F. Applicable Requirement Summary

Mark the types of applicable requirements that apply:

___ SIP ___ FIP/TIP ___ PSD ___Non-attainment NSR

___ Minor source NSR _X__ Section 111 ___ Phase I acid rain ___Phase II acid rain

_X__ Stratospheric ozone ___ OCS regulations __X_ NESHAP ___ Sec. 112(d) MACT

___ Sec. 112(g) MACT ___ Early reduction of HAP ___ Sec 112(j) MACT ___ RMP [Sec.112(r)]

___ Section 129 ___ NAAQS, increments or visibility but for temporary sources (This is rare)

Is the source subject to the Deepwater Port Act? ___YES __X_NO

Has a risk management plan been registered? ___YES __X_NO Agency _____

Phase II acid rain application submitted? ___YES _X__NO If YES, Permitting Authority _____

G. Source-Wide PTE Restrictions and Generic Applicable Requirements

Cite and describe any emissions-limiting requirements and/or facility-wide "generic" applicable requirements.

Not applicable.

H. Process Description

List processes, products, and SIC codes for the facility.

Process	Products	SIC
Natural Gas Transmission	Not applicable	4922

I. Emission Unit Identification

Assign an emissions unit ID and describe each emissions unit at the facility. Control equipment and/or alternative operating scenarios associated with emissions units should by listed on a separate line. Applicants may exclude from this list any insignificant emissions units or activities.

Emissions Unit ID	Description of Unit
EU 001	18,000 hp Natural gas-fired Rolls Royce Avon 101G Turbine Unit 401, installed in 1971
EU 002	23,000 hp Natural gas-fired General Electric LM 1600 Turbine Unit 402, installed in 1993
EU 003	899 hp Natural gas-fired Waukesha L36GL (4SRB, low emission unit) Standby Electrical Generator, installed in 1997

United States Environmental Protection Agency

OMB No. 2060-0336, Expires 11/30/2022

Federal Operating Permit Program (40 CFR Part 71)
EMISSION UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES (EUD-1)

A. General Information

Emissions unit ID __EU 001__ Description Unit 401, Stationary Natural Gas-Fired Turbine Unit

SIC Code (4-digit) __4922____ SCC Code__20300202_____

B. Emissions Unit Description

Primary use _____Natural gas prime mover_____ Temporary Source ___Yes __X_No

Manufacturer ____Rolls Royce_____ Model No. _Avon 101G_____

Serial Number ___NA_____ Installation Date__1__/__1__/___1971____

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

Other (describe) _____

Boiler horsepower rating_____ Boiler steam flow (lb/hr)_____

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___Spreader stoker ___Underfeed stoker ___Overfeed stoker

___ Traveling grate ___Shaking grate ___Pulverized, wet bed ___ Pulverized, dry bed

Actual Heat Input __143.7*____MM BTU/hr Max. Design Heat Input __187.2____MM BTU/hr

*Based on 2018 actual fuel use and operating hours.

C. Fuel Data

Primary fuel type(s) Natural Gas Standby fuel type(s) None

Describe each fuel you expected to use during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (cf, gal., or lb.)
Natural Gas	0.8	0.0	1020

D. Fuel Usage Rates

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Natural Gas	128.143 MMscf/yr	0.184 MMscf/hr	1,607.72 MMscf/yr

E. Associated Air Pollution Control Equipment

Emissions unit ID NA Device type

Air pollutant(s) Controlled Manufacturer

Model No. Serial No.

Installation date / / Control efficiency (%)

Efficiency estimation method

F. Ambient Impact Assessment

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (this is not common).

Stack height (ft) 48.08 Inside stack diameter (ft) 5.8

Stack temp (°F) 839 Design stack flow rate (ACFM) NA

Actual stack flow rate (ACFM) 189,000 Velocity (ft/sec) 119.22

United States Environmental Protection Agency

OMB No. 2060-0336, Expires 11/30/2022

Federal Operating Permit Program (40 CFR Part 71)
EMISSION UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES (EUD-1)

A. General Information

Emissions unit ID __EU 002__ Description Unit 402, Stationary Natural Gas-Fired Turbine Unit

SIC Code (4-digit) __4922_____ SCC Code__20300202_____

B. Emissions Unit Description

Primary use _Natural gas prime mover_____ Temporary Source ___Yes _X_No

Manufacturer _____General Electric_____ Model No. ___LM 1600_____

Serial Number _____NA_____ Installation Date__5__/__1__/__1993____

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

Other (describe) _____

Boiler horsepower rating_____ Boiler steam flow (lb/hr)_____

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___Spreader stoker ___Underfeed stoker ___Overfeed stoker

___ Traveling grate ___Shaking grate ___Pulverized, wet bed ___ Pulverized, dry bed

Actual Heat Input ___94.2*___MM BTU/hr Max. Design Heat Input __184.0_____MM BTU/hr

*Based on 2018 actual fuel use and operating hours.

C. Fuel Data

Primary fuel type(s) Natural Gas Standby fuel type(s) None

Describe each fuel you expected to use during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (cf, gal., or lb.)
Natural Gas	0.8	0.0	1020

D. Fuel Usage Rates

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Natural Gas	94.12 MMscf/yr	0.180 MMscf/hr	1,580.24 MMscf/yr

E. Associated Air Pollution Control Equipment

Emissions unit ID NA Device type

Air pollutant(s) Controlled Manufacturer

Model No. Serial No.

Installation date / / Control efficiency (%)

Efficiency estimation method

F. Ambient Impact Assessment

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (this is not common).

Stack height (ft) 40.0 Inside stack diameter (ft) 6.60

Stack temp (°F) 934.0 Design stack flow rate (ACFM) NA

Actual stack flow rate (ACFM) 249,809 Velocity (ft/sec) 94.67

United States Environmental Protection Agency

OMB No. 2060-0336, Expires 11/30/2022

Federal Operating Permit Program (40 CFR Part 71)
EMISSION UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES (EUD-1)

A. General Information

Emissions unit ID __EU 003_____ Description Natural gas-fired Emergency Standby Generator_

SIC Code (4-digit) __4922_____ SCC Code___20300201_____

B. Emissions Unit Description

Primary use _Supplement Electrical Generator_____ Temporary Source ___Yes _X_No

Manufacturer ____Waukesha Motor Co._____ Model No.__L36GL_____

Serial Number _C-12221/1_____ Installation Date_10__/__8__/__1997____

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

Other (describe) _____

Boiler horsepower rating_____ Boiler steam flow (lb/hr)_____

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___Spreader stoker ___Underfeed stoker ___Overfeed stoker

___ Traveling grate ___Shaking grate ___Pulverized, wet bed ___ Pulverized, dry bed

Actual Heat Input ___7.2_____MM BTU/hr Max. Design Heat Input ___7.2_____MM BTU/hr

C. Fuel Data

Primary fuel type(s) Natural Gas Standby fuel type(s)_____

Describe each fuel you expected to use during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (cf, gal., or lb.)
Natural Gas	0.8	0.0	1020

D. Fuel Usage Rates

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Natural Gas	0.15 MMscf/yr	0.007 MMscf/hr	61.77 MMscf/yr

E. Associated Air Pollution Control Equipment

Emissions unit ID NA Device type_____

Air pollutant(s) Controlled_____ Manufacturer_____

Model No._____ Serial No._____

Installation date_____/_____/_____ Control efficiency (%) _____

Efficiency estimation method_____

F. Ambient Impact Assessment

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (this is not common).

Stack height (ft) 24.4 Inside stack diameter (ft) 0.67

Stack temp (^{o}F) 800 Design stack flow rate (ACFM) 3,100

Actual stack flow rate (ACFM) 5,734 Velocity (ft/sec) 271.6

Federal Operating Permit Program (40 CFR Part 71)
INSIGNIFICANT EMISSIONS (IE)

On this page list each insignificant activity or emission unit. In the "number" column, indicate the number of units in this category. Descriptions should be brief but unique. Indicate which emissions criterion of part 71 is the basis for the exemption.

Number	Description of Activities or Emissions Units	RAP (except HAP)	HAP
1	40 CFR 71.5(c)(11)(ii)(A) - Emission criteria for regulated air pollutants, excluding hazardous air pollutants (HAP). Potential to emit of regulated air pollutants, excluding HAP, for any single emissions unit shall not exceed 2 tpy: *One ~400 gallon diesel storage tank with dispensing operation located in the parking lot west of the office/service building.*	✓	
4	40 CFR 71.5(c)(11)(ii)(A) - Emission criteria for regulated air pollutants, excluding hazardous air pollutants (HAP). Potential to emit of regulated air pollutants, excluding HAP, for any single emissions unit shall not exceed 2 tpy: Brazing, soldering, or welding equipment. *Three arc welding torches and one oxy-acetylene welding, approximately 20 hours per year, used to repair equipment and fabricate parts.*	✓	
2	40 CFR 71.5(c)(11)(ii)(A): Emission criteria for regulated air pollutants, excluding hazardous air pollutants (HAP). Potential to emit of regulated air pollutants, excluding HAP, for any single emissions unit shall not exceed 2 tpy.: Individual emission unit with the potential to emit less than limits listed. *Two portable gasoline-powered engines: One 2.8 hp Honda GX100 electrical generator and one 3.5 hp Honda GX120 water pump.*	✓	
5	40 CFR 71.5(c)(11)(i)(D): Heating units used for human comfort that do not exhaust air pollutants into the ambient air from any manufacturing or other industrial process.: *Three Reznor Space Heaters each with a capacity of 200,000 Btu/hr. One residential hot water heater with a capacity of 33,000 Btu/hr. One natural gas fired boiler used for comfort heat with a capacity of 5,230,000 Btu/hr (formerly identified as EU 004).*	✓	
1	40 CFR 71.5(c)(11)(ii)(A) - Emission criteria for regulated air pollutants, excluding hazardous air pollutants (HAP). Potential to emit of regulated air pollutants, excluding HAP, for any single emissions unit shall not exceed 2 tpy: *Small abrasive cleaning operation located in a hood with all emissions filtered and vented inside the building.*	✓	

Federal Operating Permit Program (40 CFR Part 71)
EMISSION CALCULATIONS (EMISS)

Calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID EU 001

B. Identification and Quantification of Emissions

For each emissions unit identified above, list each regulated air pollutant or other pollutant for which the source is major, then list any other regulated pollutant (for fee calculation) not already listed. HAP may be simply listed as "HAP." Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives for fee purposes. See instructions concerning GHGs. Values should be reported to the nearest tenth (0.1) of a ton for yearly values or tenth (0.1) of a pound for hourly values.

Air Pollutants	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
See emission calculations in Appendix A and 2018 actual emissions in Appendix D.				

Federal Operating Permit Program (40 CFR Part 71)
EMISSION CALCULATIONS (EMISS)

Calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID EU 002

B. Identification and Quantification of Emissions

For each emissions unit identified above, list each regulated air pollutant or other pollutant for which the source is major, then list any other regulated pollutant (for fee calculation) not already listed. HAP may be simply listed as "HAP." Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives for fee purposes. See instructions concerning GHGs. Values should be reported to the nearest tenth (0.1) of a ton for yearly values or tenth (0.1) of a pound for hourly values.

Air Pollutants	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
See emission calculations in Appendix A and 2018 actual emissions in Appendix D.				

Federal Operating Permit Program (40 CFR Part 71)
EMISSION CALCULATIONS (EMISS)

Calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID EU 003

B. Identification and Quantification of Emissions

For each emissions unit identified above, list each regulated air pollutant or other pollutant for which the source is major, then list any other regulated pollutant (for fee calculation) not already listed. HAP may be simply listed as "HAP." Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives for fee purposes. See instructions concerning GHGs. Values should be reported to the nearest tenth (0.1) of a ton for yearly values or tenth (0.1) of a pound for hourly values.

Air Pollutants	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
See emission calculations in Appendix A and 2018 actual emissions in Appendix D.				

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Federal Operating Permit Program (40 CFR Part 71)
POTENTIAL TO EMIT (PTE)

For each emissions unit at the facility, list the unit ID and the PTE of each air pollutant listed below and sum the values to determine the total PTE for the facility. It may be helpful to complete form **EMISS** before completing this form. Report each pollutant at each unit to the nearest tenth (0.1) of a ton; values may be reported with greater precision (i.e., more decimal places) if desired. Report facility total PTE for each listed pollutant on this form and in section **J** of form **GIS**. The HAP column is for the PTE of all HAPs for each unit. You may use an attachment to show any pollutants that may be present in major amounts that are not already listed on the form (this is not common).

Emissions Unit ID	Regulated Air Pollutants and Pollutants for which Source is Major (PTE in tons/yr)						
	NOx	**VOC**	**SO2**	**PM10**	**CO**	**Lead**	**HAP**
EU 001	201.7	1.7	2.8	5.4	485.1	N/A	0.8
EU 002	463.9	1.7	2.7	5.3	29.0	N/A	0.8
EU 003	1.0	0.1	1.1E-03	3.5E-02	6.7	N/A	0.1
FACILITY TOTALS:	**666.6**	**3.5**	**5.5**	**10.8**	**520.8**	**N/A**	**1.7**

United States Environmental Protection Agency

OMB No. 2060-0336, Expires 11/30/2022

Federal Operating Permit Program (40 CFR Part 71)
INITIAL COMPLIANCE PLAN AND COMPLIANCE CERTIFICATION (I-COMP)

SECTION A - COMPLIANCE STATUS AND COMPLIANCE PLAN

Complete this section for each unique combination of applicable requirements and emissions units at the facility. List all compliance methods (monitoring, recordkeeping and reporting) you used to determine compliance with the applicable requirement described above. Indicate your compliance status at this time for this requirement and compliance methods and check "YES" or "NO" to the follow-up question.

Emission Unit ID(s): EU-002 (Unit 402, LM 1600)

Applicable Requirement (Describe and Cite):
Permit Section 2.0(A)(1) NOx limit: 196 ppmv @15% O_2 on a dry basis. 40 CFR 60.332(a)(2).

Compliance Methods for the Above (Description and Citation):
Testing: Performance testing completed in December 2015 – shows compliance (also refer to "Performance Testing" – Permit Condition Section 2.0(B)(2) below).

Compliance Status:

__X_ In Compliance: Will you continue to comply up to permit issuance? X Yes ___No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes ____No

Emission Unit ID(s): EU-002 (Unit 402, LM 1600)

Applicable Requirement (Description and Citation):
Permit Section 2.0(A)(2) Sulfur NSPS limit: shall not burn any fuel which contains sulfur in excess of 0.8% by weight. 40 CFR 60.333(b).

Compliance Methods for the Above (Description and Citation):
Operation and Tariff Recordkeeping. Unit fueled with pipeline quality natural gas. Company tariff requirements show compliance: "shall not contain more than 20 grains total sulfur/100 scf of gas" (0.068% by weight). The most recent company tariff is attached in Appendix B.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): All Emission Units

Applicable Requirement (Description and Citation):
Permit Section 2.0(A)(3) Good Air Pollution Control Practice. 40 CFR 60.11(d)

Compliance Methods for the Above (Description and Citation):
Operation Procedures and Recordkeeping. Emission Units are operated in conjunction with manufacturer and industry standards for proper operation and maintenance. Emission units have no pollution control equipment. Standard Operation and Maintenance procedures are located onsite, Permit-specific training was provided to all "facility plant operators" on 05/20/2016. Records of training materials and sign-in sheets are kept onsite.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): EU-002 (Unit 402, LM 1600)

Applicable Requirement (Description and Citation):
Permit Section 2.0(B)(1) and (2) Monitoring and Testing.

Compliance Methods for the Above (Description and Citation):
Tariff Recordkeeping. GLGT does not claim an allowance for fuel bound nitrogen, therefore, the nitrogen content is not monitored. GLGT does not monitor sulfur content and shows compliance with sulfur content through valid tariff sheet. The most recent company tariff is attached in Appendix B.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): EU-002 (Unit 402, LM 1600)

Applicable Requirement (Description and Citation):
Permit Section 2.0(B)(3) Monitoring and Testing

Compliance Methods for the Above (Description and Citation):
Testing and Recordkeeping. Performance testing on EU002 was conducted within 12 months of the effective date of this permit and will be conducted subsequently every 5 years thereafter. Testing for NOx will be conducted in accordance with test methods, procedures and calculations in 40 CFR Part 60 (Method 20). The most recent stack testing was conducted on December 2 and 9, 2015. This stack testing was completed in accordance with an approved stack test plan.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): Facility

Applicable Requirement (Description and Citation):
Permit Section 2.0(C) Recordkeeping. 40 CFR 71.6(a)(3)

Compliance Methods for the Above (Description and Citation):
Recordkeeping. Performance test result reports, training records, and operation & maintenance procedures are maintained onsite.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): Facility

Applicable Requirement (Description and Citation):
Permit Section 3.0(A) General Recordkeeping. 40 CFR 71.6(a)(3)(ii)

Compliance Methods for the Above (Description and Citation):
Recordkeeping. All records of required monitoring information and support information are maintained for a period of 5 calendar years from the date of sampling, measurement, report or application.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): Facility

Applicable Requirement (Description and Citation):
Permit Section 3.0(B) Semiannual monitoring reporting and deviations reporting to EPA by January 30th and July 30th of each year. 40 CFR 71.6(a)(3)(iii).

Compliance Methods for the Above (Description and Citation):
Reporting and Recordkeeping. Monitoring and deviation reports were submitted by the due dates as required.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): Facility

Applicable Requirement (Description and Citation):
Permit Section 3.0(C) Permittee shall provide performance testing facilities to comply with 40 CFR 60.8(e), 71.6(a)(3)(I).

Compliance Methods for the Above (Description and Citation):
Testing. All Great Lakes turbine units have adequate sampling ports for air emissions testing; safe access and safe platform; and appropriate utilities to run testing equipment and conduct proper sampling.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): Facility – General Requirements

Applicable Requirement (Description and Citation):
Permit Section 4.0(B) Annual fee payment and annual report of actual emissions due on or before November 15th of each year. 40 CFR 71.6(a)(7); 71.9.

Compliance Methods for the Above (Description and Citation):
Reporting and Recordkeeping. An Annual Report of actual emissions for the preceding calendar year; fee calculation work sheet; and full payment of the annual fee is submitted on or before November 15th of each year, as required. See 2018 actual emissions attached in Appendix D.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): Facility – General Requirements

Applicable Requirement (Description and Citation):
Permit Section 4.0(C) Compliance Statement – must be in compliance with all conditions of this Part 71 Permit. 40 CFR 71.6(a)(6)

Compliance Methods for the Above (Description and Citation):
Reporting. Refer to accompanying Compliance Certification (CTAC) form and permit conditions as summarized in this Compliance Plan/Certification.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): EU 003 (Waukesha L36GL Emergency Generator)

Applicable Requirement (Description and Citation):
Permit Section 2.0(D) Operational Restrictions for EU 003. 40 CFR 63.6640(f)

Note: 40 CFR 63.6640(f)(2)(ii) and 40 CFR 63.6640(f)(2)(ii) (included as Permit Section 2.0(D)(f)(2)(ii) and 2.0(D)(f)(2)(iii)) were vacated on May 1, 2015. GLGT is requesting this section be removed from the permit upon reissuance. All other subparts in Permit Section 2.0(D) will continue to be applicable to the emergency generator. GLGT will continue to meet compliance with this section.

Compliance Methods for the Above (Description and Citation):
Recordkeeping. Emergency engine operating hours are recorded and maintained as required. Hours of operation records include the hours spent for emergency, including justification, non-emergency operation, maintenance checks and readiness testing.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): EU 003 (Waukesha L36GL Emergency Generator)

Applicable Requirement (Description and Citation):
40 CFR Part 63, Subpart ZZZZ – Emission and Operating Limitations:

40 CFR Part 63.6603(a), Table 2d.5:

(1) The Permittee shall change the oil and filter every 500 hours of operation or annually, whichever comes first.
(2) The Permittee shall inspect spark plugs every 1,000 hours of operation or annually, which ever comes first, and replace as necessary.
(3) The Permittee shall inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

Compliance Methods for the Above (Description and Citation):
Operating requirements and recordkeeping. Engine maintenance is performed as required and records of maintenance are maintained as required. Records of the most recent engine maintenance performed on 01/24/2019 are included as Appendix C.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): EU 003 (Waukesha L36GL Emergency Generator)

Applicable Requirement (Description and Citation):
40 CFR Part 63, Subpart ZZZZ – Emission and Operating Limitations:

40 CFR Part 63.6603(a), 63.6625(h), Table 2d – The Permittee shall minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the emission standard applicable to all times other than startup in 40 CFR Part 63, Subpart ZZZZ, Table 2d apply.

Compliance Methods for the Above (Description and Citation):
GLGT minimizes the engine's time spent at idle during startup and minimizes the engine's startup time to a period needed for appropriate and safe loading of the engine, and does not exceed 30 minutes.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): EU 003 (Waukesha L36GL Emergency Generator)

Applicable Requirement (Description and Citation):
40 CFR Part 63, Subpart ZZZZ – Emission and Operating Limitations:

40 CFR Part 63.6625(e): The Permittee shall operate and maintain the stationary RICE and after-treatment control device (if any) according to the manufacturer's emission-related written instructions or develop its own maintenance plan which must provide, to the extent practicable, for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.

Compliance Methods for the Above (Description and Citation):
GLGT has developed their own maintenance plan which provides, to the extent practicable, for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. GLGT operates and maintains the emergency generator according to this plan.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): EU 003 (Waukesha L36GL Emergency Generator)

Applicable Requirement (Description and Citation):
40 CFR Part 63, Subpart ZZZZ – Emission and Operating Limitations:

40 CFR Part 63.6640(a), Table 6.9 – The Permittee must demonstrate continuous compliance with the applicable work or management practices of 40 CFR Part 63, Subpart ZZZZ, Table 2d by operating and maintaining the stationary RICE according to the manufacturer's emission-related operation and maintenance instructions; or develop and follow its own maintenance plan which must provide, to the extent practicable, for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.

Compliance Methods for the Above (Description and Citation):
GLGT has developed their own maintenance plan which provides, to the extent practicable, for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. GLGT operates and maintains the emergency generator according to this plan. Engine maintenance is performed as required and records of maintenance are maintained as required. Records of the most recent engine maintenance performed on 01/24/2019 are included as Appendix C.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): EU 003 (Waukesha L36GL Emergency Generator)

Applicable Requirement (Description and Citation):
40 CFR Part 63, Subpart ZZZZ – Emission and Operating Limitations:

40 CFR Part 63.6625(f) – The Permittee shall install a non-resettable hour meter if one is not already installed.

Compliance Methods for the Above (Description and Citation):
EU 003 has a non-resettable hour meter installed as required.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): EU 003 (Waukesha L36GL Emergency Generator)

Applicable Requirement (Description and Citation):
40 CFR Part 63, Subpart ZZZZ – Emission and Operating Limitations:

40 CFR Part 63.6625(j) – The Permittee may utilize an oil analysis program in order to extend the specified oil change requirement. The oil analysis must be performed at the same frequency specified for changing the oil. The analysis program must at a minimum analyze the following three parameters:

Total Acid Number, viscosity, and percent water content. The condemning limits for these parameters are as follows: Total Acid Number increases by more than 3.0 milligrams of potassium hydroxide (KOH) per gram from Total Acid Number of the oil when new; viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or percent water content (by volume) is greater than 0.5. If all of these condemning limits are not exceeded, the Permittee is not required to change the oil. If any of the limits are exceeded, the Permittee must change the oil within 2 business days of receiving the results of the analysis; if the engine is not in operation when the results of the analysis are received, the Permittee must change the oil within 2 business days or before commencing operation, whichever is later. The Permittee must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine.

Compliance Methods for the Above (Description and Citation):
Engine maintenance, including oil changes, are performed as required and records of maintenance are maintained as required, including if the optional oil analysis program is utilized. Records of the most recent engine maintenance performed on 01/24/2019, including records of oil analysis, are included as Appendix C.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): EU 003 (Waukesha L36GL Emergency Generator)

Applicable Requirement (Description and Citation):
40 CFR Part 63, Subpart ZZZZ – Emission and Operating Limitations:

40 CFR Part 63.6605(a) – The Permittee must be in compliance with the emission limitations, operating limitations, and other requirements for EU 003 in 40 CFR Part 63, Subpart ZZZZ that apply to the Permittee at all times.

Compliance Methods for the Above (Description and Citation):
GLGT is in compliance with the emission limitations, operating limitations, and other requirements for EU 003 in 40 CFR Part 63, Subpart ZZZZ that apply to GLGT at all times. Description of compliance with all applicable requirements is included and detailed further in this form.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): EU 003 (Waukesha L36GL Emergency Generator)

Applicable Requirement (Description and Citation):
40 CFR Part 63, Subpart ZZZZ – Emission and Operating Limitations:

40 CFR Part 63.6605(b) – The Permittee must operate and maintain EU 003, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution practices for minimizing emissions. The general duty to minimize emissions does not require the Permittee to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance producers are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

Compliance Methods for the Above (Description and Citation):
GLGT maintains all engine hours of operation records as required. GLGT has developed their own maintenance plan which provides, to the extent practicable, for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. GLGT operates and maintains the emergency generator according to this plan. Engine maintenance is performed as required and records of maintenance are maintained as required. Records of the most recent engine maintenance performed on 01/24/2019 are included as Appendix C.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): EU 003 (Waukesha L36GL Emergency Generator)

Applicable Requirement (Description and Citation):
40 CFR Part 63, Subpart ZZZZ – Notifications, Reports, and Records:

40 CFR Part 63.6640(b) – The Permittee must report each instance in which they did not meet each emission limitation or operating limitation in Table 2d of 40 C.F.R. Part 63, Subpart ZZZZ that applies to them. These instances are deviations from the emission and operating limitations in 40 CFR Part 63, Subpart ZZZZ. These deviations must be reported according to the requirements in 40 CFR 63.6650.

Compliance Methods for the Above (Description and Citation):
Reporting. GLGT will report all deviations to operating limitations in Table 2d if required.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): EU 003 (Waukesha L36GL Emergency Generator)

Applicable Requirement (Description and Citation):
40 CFR Part 63, Subpart ZZZZ – Notifications, Reports, and Records:

40 CFR Part 63.6650(a), (h) – If EU 003 is operated for the purpose specified in 40 CFR

63.6640(f)(4)(ii), the Permittee must submit an annual report according to the following requirements:

(a) The report must contain the following information [40 C.F.R. § 63.6650(h)(1)]:
(i) Company name and address where the engine is located.
(ii) Date of the report and beginning and ending dates of the reporting period.
(iii) Engine site rating and model year. [40 C.F.R. § 63.6650(h)(1)(iii)]
(iv) Latitude and longitude of the engine in decimal decrees reported to the fifth decimal place.
(v) Hours spent for operation for the purpose specified in 63.6640(f)(4)(ii), including the date, start time, and end time for engine operation for the purposes specified in § 63.6640(f)(4)04 The report must also identify the entity that dispatched the engine and the situation that necessitated the dispatch of the engine.

(b) Annual reports for each calendar year must be submitted no later than March 31 of the following calendar year.

(c) The annual report must be submitted electronically using the 40 C.F.R. Part 63, Subpart ZZZZ specific reporting form in the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) (www.epa.gov/cdx). However, if the reporting form specific to 40 C.F.R. Part 63, Subpart ZZZZ is not available in CEDRI at the time that the report is due, the written report must be submitted to the Administrator at the appropriate address listed in 40 CFR 63.13.

Compliance Methods for the Above (Description and Citation):
EU 003 is not currently operated for the purpose specified in 40 CFR 63.6640(f)(4)(ii). Should EU003 be operated for this purpose, GLGT will submit an annual report as required.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): EU 003 (Waukesha L36GL Emergency Generator)

Applicable Requirement (Description and Citation):
40 CFR Part 63, Subpart ZZZZ – Notifications, Reports, and Records:

40 CFR Part 63.6665 – The Permittee must comply with the applicable General Provisions in 40 CFR 63.1 through 63.15, as shown in Table 8 of Subpart 40 CFR Part 63.

40 CFR Part 63.6640(e) – The Permittee must report each instance in which they did not meet the applicable requirements in Table 8 to 40 CFR Part 63, Subpart ZZZZ.

Compliance Methods for the Above (Description and Citation):
GLGT is in compliance with the applicable General Provisions in 40 CFR 63.1 through 63.15, as shown in Table 8 of Subpart 40 CFR Part 63. GLGT will report each instance in which they did not meet the applicable requirements in Table 8 to 40 CFR Part 63, Subpart ZZZZ as required.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): EU 003 (Waukesha L36GL Emergency Generator)

Applicable Requirement (Description and Citation):
40 CFR Part 63, Subpart ZZZZ – Notifications, Reports, and Records:

40 CFR Part 63.6660(a) – The records must be in a form suitable and readily available for expeditious review according to 63.10(b)(1).

40 CFR Part 63.6660(b) – As specified in 40 CFR 63.10(b)(1), the Permittee must keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.

40 CFR Part 63.6660(c) – The Permittee must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record.

Compliance Methods for the Above (Description and Citation):
Recordkeeping. GLGT keeps all records required by 40 CFR 63 Subpart ZZZZ for 5 years and in a form suitable and readily available for expeditious review as required.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

B. SCHEDULE OF COMPLIANCE

Complete this section if you answered "NO" to any of the questions in section A. Also, complete this section if required to submit a schedule of compliance by an applicable requirement. Please attach copies of any judicial consent decrees or administrative orders for this requirement.

Unit(s)_____ Requirement_____

Reason for Noncompliance. Briefly explain reason for noncompliance at time of permit issuance or that future-effective requirement will not be met on a timely basis:

Narrative Description of how Source Compliance Will be Achieved. Briefly explain your plan for achieving compliance:

Schedule of Compliance. Provide a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance, including a date for final compliance.

Remedial Measure or Action	Date to be Achieved

C. SCHEDULE FOR SUBMISSION OF PROGRESS REPORTS

Only complete this section if you are required to submit one or more schedules of compliance in section B or if an applicable requirement requires submittal of a progress report. If a schedule of compliance is required, your progress report should start within 6 months of application submittal and subsequently, no less than every six months. One progress report may include information on multiple schedules of compliance.

Contents of Progress Report (describe):

First Report____/____/___ Frequency of Submittal_____

Contents of Progress Report (describe):

First Report____/____/___ Frequency of Submittal_____

D. SCHEDULE FOR SUBMISSION OF COMPLIANCE CERTIFICATIONS

This section must be completed once by every source. Indicate when you would prefer to submit compliance certifications during the term of your permit (at least once per year).

Frequency of submittal_____ Beginning____/____/____

E. COMPLIANCE WITH ENHANCED MONITORING & COMPLIANCE CERTIFICATION REQUIREMENTS

This section must be completed once by every source. To certify compliance with these, you must be able to certify compliance for every applicable requirement related to monitoring and compliance certification at every unit.

Enhanced Monitoring Requirements: __X__ In Compliance ____ Not In Compliance

Compliance Certification Requirements: __X__ In Compliance ____ Not In Compliance

EPA United States Environmental Protection Agency

OMB No. 2060-0336, Expires 11/30/2022

Federal Operating Permit Program (40 CFR Part 71)
CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS (CTAC)

This form must be completed, signed by the "Responsible Official" designated for the facility or emission unit, and sent with each submission of documents (i.e., application forms, updates to applications, reports, or any information required by a part 71 permit).

A. Responsible Official

Name: (Last) Craig (First) Rundle (MI) __

Title Director, USPO Great Lakes Region

Street or P.O. Box 18428 South West Creed Dr.

City Tinley Park State IL ZIP 49307

Telephone (708) 342 - 4701 Facsimile (____) ____ - _____

B. Certification of Truth, Accuracy and Completeness (to be signed by the responsible official)

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in these documents are true, accurate and complete.

Name (signed) 

Name (typed) Craig Rundle Date: 03 / 13 / 2020

Appendix A

Emissions Calculations

Great Lakes Gas Transmission LP
Deer River Compressor Station No. 4 (CS4)

Significant Activities

Emission Point ID	Source	Manufacturer	Model/Type	Engine hp Rating	Heat Input (MMBTU/hr)
EU 001	Natural Gas-fired Turbine	Rolls Royce	Avon 101G	18,000	187.20
EU 002	Natural Gas-fired Turbine	General Electric	LM 1600	23,000	184.00
EU 003	Natural Gas-fired Standby Electrical Generator	Waukesha Motor	16SGTB	899	7.20

Insignificant Activities

Source Description	Permit Exemption Rule
400 gallon diesel storage tank	40 CFR 71.5(c)(11)(ii)(A): Emission criteria for regulated air pollutants, excluding hazardous air pollutants (HAP). Potential to emit of regulated air pollutants, excluding HAP, for any single emissions unit shall not exceed 2 tpy.
Three arc welding torches and one oxy-acetylene welding, approximately 20 hours per year, used to repair and fabricate parts.	40 CFR 71.5(c)(11)(ii)(A): Emission criteria for regulated air pollutants, excluding hazardous air pollutants (HAP). Potential to emit of regulated air pollutants, excluding HAP, for any single emissions unit shall not exceed 2 tpy.
Two portable gasoline-powered engines: One 2.8 hp Honda GX100 electrical generator and one 3.5 hp Honda GX120 water pump.	40 CFR 71.5(c)(11)(ii)(A): Emission criteria for regulated air pollutants, excluding hazardous air pollutants (HAP). Potential to emit of regulated air pollutants, excluding HAP, for any single emissions unit shall not exceed 2 tpy.
Three Reznor Space Heaters each with a capacity of 200,000 Btu/hr and one residential hot water heater with a capacity of 33,000 Btu/hr.	40 CFR 71.5(c)(11)(i)(D): Heating units used for human comfort that do not exhaust air pollutants into the ambient air from any manufacturing or other industrial process.
One natural-gas fired boiler with a capacity of 5,230,000 MMBtu/hr.	41 CFR 71.5(c)(11)(i)(D): Heating units used for human comfort that do not exhaust air pollutants into the ambient air from any manufacturing or other industrial process.
Small abrasive cleaning operation located in a hood with all emissions filtered and vented inside the building.	40 CFR 71.5(c)(11)(ii)(A): Emission criteria for regulated air pollutants, excluding hazardous air pollutants (HAP). Potential to emit of regulated air pollutants, excluding HAP, for any single emissions unit shall not exceed 2 tpy.

Regulated Pollutants, Potential to Emit Summary
Great Lakes Gas Transmission LP
Deer River Compressor Station No. 4 (CS4)

Unit	Unit Description	Engine HP	Engine Type	Heat Input	Emission Rates													
					NOx		CO		VOC		PM		PM10		PM2.5		SO2	
				(MMBtu/hr)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
EU 001	Natural Gas-fired Turbine	18,000	NA	187.20	46.05	201.70	110.75	485.07	0.39	1.72	1.24	5.41	1.24	5.41	1.24	5.41	0.64	2.79
EU 002	Natural Gas-fired Turbine	23,000	NA	184.00	105.91	463.89	6.62	29.01	0.39	1.69	1.21	5.32	1.21	5.32	1.21	5.32	0.63	2.74
EU 003	Natural Gas-fired Standby Electrical Generator	899	4SRB	7.20	3.96	17.36	26.75	117.18	0.21	0.93	0.14	0.61	0.14	0.61	0.14	0.61	4.23E-03	1.85E-02
Total Emissions					**155.93**	**682.95**	**144.13**	**631.27**	**0.99**	**4.35**	**2.59**	**11.34**	**2.59**	**11.34**	**2.59**	**11.34**	**1.27**	**5.55**

Emissions provided are for representation purposes only; emission and operational rates are not intended to convey any limitations or restrictions

Hazardous Air Pollutants, Emissions Summary
Great Lakes Gas Transmission LP
Deer River Compressor Station No. 4 (CS4)

Unit	Unit Description	Engine HP	Engine Type	Heat Input	Formaldehyde Potential Emissions		Total HAP Potential Emissions	
				(MMBtu/hr)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
EU 001	Natural Gas-fired Turbine	18,000	NA	187.20	0.13	0.58	0.19	0.84
EU 002	Natural Gas-fired Turbine	23,000	NA	184.00	0.13	0.57	0.19	0.83
EU 003	Natural Gas-fired Standby Electrical Generator	899	4SRB	7.20	0.15	0.65	0.23	1.02
Total Emissions					**0.41**	**1.80**	**0.61**	**2.69**

Emissions provided are for representation purposes only; emission and operational rates are not intended to convey any limitations or restrictions.

Greenhouse Gas, Emissions Summary
Great Lakes Gas Transmission LP
Deer River Compressor Station No. 4 (CS4)

Unit	Unit Description	HP	Heat Input	Emission Rates									
				CO2		CH4		N2O		Total GHGs		CO2e	
			(MMBtu/hr)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
EU 001	Natural Gas-fired Turbine	18000	187.20	21,898	95,914	0.41	1.81	0.04	0.18	21,899	95,916	21,921	96,013
EU 002	Natural Gas-fired Turbine	23000	184.00	21,524	94,274	0.41	1.78	0.04	0.18	21,524	94,276	21,546	94,372
EU 003	Natural Gas-fired Standby Electrical Generator	899	7.20	841.30	3,685	0.02	0.07	0.002	0.01	841.32	3,685	842.17	3,689
Total Emissions				**44,263**	**193,873**	**0.83**	**3.65**	**0.08**	**0.37**	**44,264**	**193,877**	**44,309**	**194,073**

Emissions provided are for representation purposes only; emission and operational rates are not intended to convey any limitations or restrictions.

TITLE V RENEWAL
Great Lakes Gas Transmission LP
Deer River Compressor Station No. 4 (CS4)

Unit ID No.	**EU 001**	
Description of Unit	**Rolls Royce/Avon**	
Manufacturer	Rolls Royce	
Date of Construction/Modification	1971	
Fuel Used	Natural Gas	
Maximum Higher Heating Value (HHV)	1,020	Btu/scf
Rated Horsepower (hp)	18,000	hp
Heat Rate (Btu/bhp-hr)	10,400	Btu/hp-hr
Heat Input (MMBtu/hr)	187.200	MMBtu/hr
Maximum Hourly Fuel Consumption	183,529	scf/hr
Annual Hours of Operation	8,760	hr/yr
Annual Fuel Consumption	1,607.72	MMscf/yr

Emission Factors:

Pollutant	Emission Factor	Emission Factor Units	Emission Factor Source
NOx	2.46E-01	lb/MMBtu	a
CO	5.92E-01	lb/MMBtu	a
NM/NE VOC	2.10E-03	lb/MMBtu	b
PM (Filterable + Condensable)	0.01	lb/MMBtu	b
PM10	0.01	lb/MMBtu	b
PM2.5	0.01	lb/MMBtu	b
SO2	3.40E-03	lb/MMBtu	b

[a] Emission Factors are from a stack test conducted on February 16, 2010. Emission factors have a 20% safety factor added to account for operational variability.

[b] AP-42 Table 3.1-2a "Emission Factors for Criteria Pollutants and Greenhouse Gases from Stationary Gas Turbines" (4/00).

POTENTIAL EMISSIONS:

Pollutant	Emission Rate (lb/hr)	Calculation Methodology	Potential Emissions [d] (ton/yr)
NOx	46.05	c	201.70
CO	110.75	c	485.07
NM/NEVOC	0.39	c	1.72
PM (Filterable + Condensable)	1.24	c	5.41
PM10	1.24	c	5.41
PM2.5	1.24	c	5.41
SO2	0.64	c	2.79

Sample Calculations:

[c] Emission Rate (lb/hr) = (Emission Factor, lb/MMBtu) * (Maximum Higher Heating Value (HHV), Btu/scf) * (Maximum Hourly Fuel Consumption, scf/hr) * (MM/1,000,000)

[d] Emission Rate (ton/yr) = (Emission Rate, lb/hr) * (Annual Operation, hrs/yr) * (1 ton/2000 lb)

TITLE V RENEWAL
Great Lakes Gas Transmission LP
Deer River Compressor Station No. 4 (CS4)

HAP Calculated Emissions:

Pollutant		Emission Factor (lb/MMBtu)[e]	Potential Emissions per engine (lb/hr)[f]	(tons/yr)[g]
HAPs:	**CAS No.:**			
1,3-Butadiene	106990	4.30E-07	8.05E-05	3.53E-04
Acetaldehyde	75070	4.00E-05	7.49E-03	3.28E-02
Acrolein	107028	6.40E-06	1.20E-03	5.25E-03
Benzene	71432	1.20E-05	2.25E-03	9.84E-03
Ethylbenzene	100414	3.20E-05	5.99E-03	2.62E-02
Formaldehyde	50000	7.10E-04	1.33E-01	5.82E-01
Naphthalene	91203	1.30E-06	2.43E-04	1.07E-03
PAH	NA	2.20E-06	4.12E-04	1.80E-03
Propylene Oxide	75569	2.90E-05	5.43E-03	2.38E-02
Toluene	108883	1.30E-04	2.43E-02	1.07E-01
Xylene	1330207	6.40E-05	1.20E-02	5.25E-02
Total HAP		**1.03E-03**	**0.19**	**0.84**

[e] AP-42 Table 3.1-3 "Uncontrolled Emission Factors for Stationary Gas Turbines " (4/00).

[f] Emission Rate (lb/hr) =
(Emission Factor, lb/MMBtu) * (Rated Horsepower, hp) * (Heat Rate, Btu/bhp-hr) * (MM/1,000,000)

[g] Emission Rate (ton/yr) = (Emission Rate, lb/hr) * (Annual Hours of Operation, hrs/yr) * (1 ton/2000 lb)

TITLE V RENEWAL
Great Lakes Gas Transmission LP
Deer River Compressor Station No. 4 (CS4)

Potential Greenhouse Gas (GHG) Calculated Emissions:

Pollutant	Uncontrolled Emission Factor[2]	Factor Units[2]	Emissions (lb/hr)[1]	Emissions (TPY)	Global Warming Potential (GWP)[2]	CO2e Emissions (lb/hr)	CO2e Emissions (TPY)
CO_2	53.06	kg CO_2/MMBtu	21,898	95,914	1	21,898	95,914
CH_4	0.001	kg CH_4/MMBtu	0.41	1.81	25	10.32	45.19
N_2O	0.0001	kg N_2O/MMBtu	0.04	0.18	298	12.30	53.87
TOTAL GHGs	--	--	**21,899**	**95,916**	--	--	--
TOTAL GHGs (CO_2e)	--	--	--	--	--	**21,921**	**96,013**

[1] Heat input based on heat rate and permitted HP.

[2] Based on 40 CFR 98 Subpart C, 98.33(a)(1)(i), Tier 1 Methodology, Equation C-1 and using source specific heat input.

GHG Emissions (lb/hr) = EF_{GHG} (kg/MMBtu) * 2.204623 lb/kg * Source Specific Heat Input (MMbtu/hr)

GHG Emissions (TPY) = GHG Emissions (lb/hr) * Annual Operating Hours (hr/yr) * 1 Ton/2000 lb

CO_2e Emissions (TPY) = Σ (GHG Emissions (tpy) * GWP)

Where:

EF_{GHG} = Fuel-specific default CO_2, CH_4, or N_2O emission factors from Table C-1 for CO_2 (Natural gas - Weighted U.S. Average) and Table C-2 for CH_4 and N_2O (Natural Gas) of 40 CFR Part 98, Subpart C (kg/MMBtu)

Heat Input = Btu/hp-hr x Site-rated hp x (1 MMBtu/1,000,000 Btu) = MMBtu/hr

GWP = Global Warming Potentials, 40 CFR 98, Subpart A, Table A-1

TITLE V RENEWAL
Great Lakes Gas Transmission LP
Deer River Compressor Station No. 4 (CS4)

Unit ID No.	**EU 002**	
Description of Unit	General Electric LM1600	
Manufacturer	General Electric	
Date of Construction/Modification	1993	
Fuel Used	Natural Gas	
Maximum Higher Heating Value (HHV)	1,020	Btu/scf
Rated Horsepower (hp)	23,000	hp
Heat Rate (Btu/bhp-hr)	8,000	Btu/hp-hr
Heat Input (MMBtu/hr)	184.000	MMBtu/hr
Maximum Hourly Fuel Consumption	180,392	scf/hr
Annual Hours of Operation	8,760	hr/yr
Annual Fuel Consumption	1,580.24	MMscf/yr

Emission Factors:

Pollutant	Emission Factor	Emission Factor Units	Emission Factor Source
NOx	5.76E-01	lb/MMBtu	a
CO	3.60E-02	lb/MMBtu	b
NM/NE VOC	2.10E-03	lb/MMBtu	c
PM (Filterable + Condensable)	0.01	lb/MMBtu	c
PM10	0.01	lb/MMBtu	c
PM2.5	0.01	lb/MMBtu	c
SO2	3.40E-03	lb/MMBtu	c

[a] Emission Factor is from a stack test conducted on December 2 and 9, 2015. Emission factor is from high-load testing results (worst-case operating parameters) and scaled up to 100% load.

[b] Emission Factor is from a stack test conducted on February 16, 2010. Emission factor has a 20% safety factor added to account for operational variability.

[c] AP-42 Table 3.1-2a "Emission Factors for Criteria Pollutants and Greenhouse Gases from Stationary Gas Turbines" (4/00).

POTENTIAL EMISSIONS:

Pollutant	Emission Rate (lb/hr)	Calculation Methodology	Potential Emissions [e] (ton/yr)
NOx	105.91	d	463.89
CO	6.62	d	29.01
NM/NEVOC	0.39	d	1.69
PM (Filterable + Condensable)	1.21	d	5.32
PM10	1.21	d	5.32
PM2.5	1.21	d	5.32
SO2	0.63	d	2.74

Sample Calculations:

[d] Emission Rate (lb/hr) = (Emission Factor, lb/MMBtu) * (Maximum Higher Heating Value (HHV), Btu/scf) * (Maximum Hourly Fuel Consumption, scf/hr) * (MM/1,000,000)

[e] Emission Rate (ton/yr) = (Emission Rate, lb/hr) * (Annual Operation, hrs/yr) * (1 ton/2000 lb)

HAP Calculated Emissions:

Pollutant		Emission Factor (lb/MMBtu)[f]	Potential Emissions per engine (lb/hr)[g]	(tons/yr)[h]
HAPs:	**CAS No.:**			
1,3-Butadiene	106990	4.30E-07	7.91E-05	3.47E-04
Acetaldehyde	75070	4.00E-05	7.36E-03	3.22E-02
Acrolein	107028	6.40E-06	1.18E-03	5.16E-03
Benzene	71432	1.20E-05	2.21E-03	9.67E-03
Ethylbenzene	100414	3.20E-05	5.89E-03	2.58E-02
Formaldehyde	50000	7.10E-04	1.31E-01	5.72E-01
Naphthalene	91203	1.30E-06	2.39E-04	1.05E-03
PAH	NA	2.20E-06	4.05E-04	1.77E-03
Propylene Oxide	75569	2.90E-05	5.34E-03	2.34E-02
Toluene	108883	1.30E-04	2.39E-02	1.05E-01
Xylene	1330207	6.40E-05	1.18E-02	5.16E-02
Total HAP		**1.03E-03**	**0.19**	**0.83**

[f] AP-42 Table 3.1-3 "Uncontrolled Emission Factors for Stationary Gas Turbines " (4/00).

[g] Emission Rate (lb/hr) =
(Emission Factor, lb/MMBtu) * (Rated Horsepower, hp) * (Heat Rate, Btu/bhp-hr) * (MM/1,000,000)

[h] Emission Rate (ton/yr) = (Emission Rate, lb/hr) * (Annual Hours of Operation, hrs/yr) * (1 ton/2000 lb)

Potential Greenhouse Gas (GHG) Calculated Emissions:

Pollutant	Uncontrolled Emission Factor[2]	Factor Units[2]	Emissions (lb/hr)[1]	Emissions (TPY)	Global Warming Potential (GWP)[2]	CO2e Emissions (lb/hr)	CO2e Emissions (TPY)
CO_2	53.06	kg CO_2/MMBtu	21,524	94,274	1	21,524	94,274
CH_4	0.001	kg CH_4/MMBtu	0.41	1.78	25	10.14	44.42
N_2O	0.0001	kg N_2O/MMBtu	0.04	0.18	298	12.09	52.95
TOTAL GHGs	--	--	**21,524**	**94,276**	--	--	--
TOTAL GHGs (CO_2e)	--	--	--	--	--	**21,546**	**94,372**

[1] Heat input based on heat rate and permitted HP.

[2] Based on 40 CFR 98 Subpart C, 98.33(a)(1)(i), Tier 1 Methodology, Equation C-1 and using source specific heat input.

GHG Emissions (lb/hr) = EF_{GHG} (kg/MMBtu) * 2.204623 lb/kg * Source Specific Heat Input (MMbtu/hr)

GHG Emissions (TPY) = GHG Emissions (lb/hr) * Annual Operating Hours (hr/yr) * 1 Ton/2000 lb

CO_2e Emissions (TPY) = Σ (GHG Emissions (tpy) * GWP)

Where:

EF_{GHG} = Fuel-specific default CO_2, CH_4, or N_2O emission factors from Table C-1 for CO_2 (Natural gas - Weighted U.S. Average) and Table C-2 for CH_4 and N_2O (Natural Gas) of 40 CFR Part 98, Subpart C (kg/MMBtu)

Heat Input = Btu/hp-hr x Site-rated hp x (1 MMBtu/1,000,000 Btu) = MMBtu/hr

GWP = Global Warming Potentials, 40 CFR 98, Subpart A, Table A-1

TITLE V RENEWAL
Great Lakes Gas Transmission LP
Deer River Compressor Station No. 4 (CS4)

Unit ID No.	**EU 003**	
Description of Unit	**Waukesha L36GL Emergency Generator**	
Manufacturer	Waukesha	
Date of Construction/Modification	1997	
Stroke Cycle	4-Stroke	
Type of Burn	Rich-Burn	
Fuel Used	Natural Gas	
Maximum Higher Heating Value (HHV)	1,020	Btu/scf
Rated Horsepower (hp)	899	hp
Heat Rate (Btu/bhp-hr)	8,000	Btu/bhp-hr
Heat Input (MMBtu/hr)	7.2	MMBtu/hr
Maximum Hourly Fuel Consumption	7,051	scf/hr
Control Device	N/A	
Stack Designation	N/A	
Annual Hours of Operation	8,760	hr/yr
Annual Fuel Consumption	61.77	MMscf/yr

Emission Factors:

Pollutant	Emission Factor	Emission Factor Units	Emission Factor Source
NOx	0.55	lb/MMBtu	b
CO	3.72	lb/MMBtu	a
NM/NE VOC	0.03	lb/MMBtu	a
PM (Filterable + Condensable)	0.02	lb/MMBtu	a
PM10	0.02	lb/MMBtu	a
PM2.5	0.02	lb/MMBtu	a
SO2	5.88E-04	lb/MMBtu	a

[a] AP-42 Table 3.2-3 "Uncontrolled Emission Factors for 4-Stroke Rich Burn Engines" (7/00).

[b] Emission factor from manufacturer's specifications: (2.0 g/hp-hr) / (8,000 btu/hp-hr) / (435.6 g/lb) * (10^6 Btu/MMBtu) = 0.55 lb/MMBtu NOx

POTENTIAL EMISSIONS:

Pollutant	Emission Rate (lb/hr)	Calculation Methodology	Potential Emissions [d] (ton/yr)
NOx	3.96	c	17.36
CO	26.75	c	117.18
NM/NEVOC	0.21	c	0.93
PM (Filterable + Condensable)	0.14	c	0.61
PM10	0.14	c	0.61
PM2.5	0.14	c	0.61
SO2	4.23E-03	c	1.85E-02

Sample Calculation:

[c] Emission Rate (lb/hr) = (Emission Factor, lb/MMBtu) * (Maximum Higher Heating Value (HHV), Btu/scf) * (Maximum Hourly Fuel Consumption, scf/hr) * (MM/1,000,000)

[d] Emission Rate (ton/yr) = (Emission Rate, lb/hr) * (Annual Operation, hrs/yr) * (1 ton/2000 lb)

TITLE V RENEWAL
Great Lakes Gas Transmission LP
Deer River Compressor Station No. 4 (CS4)

HAP Calculated Emissions:

Pollutant		Emission Factor (lb/MMBtu)[e]	Potential Emissions (lb/hr)[f]	(tons/yr)[g]
HAPs:	**CAS No.:**			
1,1,2,2-Tetrachloroethane	79345	2.53E-05	1.82E-04	7.97E-04
1,1,2-Trichloroethane	79005	1.53E-05	1.10E-04	4.82E-04
1,3-Butadiene	106990	6.63E-04	4.77E-03	2.09E-02
1,3-Dichloropropene	542756	1.27E-05	9.13E-05	4.00E-04
Acetaldehyde	75070	2.79E-03	2.01E-02	8.79E-02
Acrolein	107028	2.63E-03	1.89E-02	8.28E-02
Benzene	71432	1.58E-03	1.14E-02	4.98E-02
Carbon Tetrachloride	56235	1.77E-05	1.27E-04	5.58E-04
Chlorobenzene	108907	1.29E-05	9.28E-05	4.06E-04
Chloroform	67663	1.37E-05	9.85E-05	4.32E-04
Ethylbenzene	100414	2.48E-05	1.78E-04	7.81E-04
Ethylene Dibromide	106934	2.13E-05	1.53E-04	6.71E-04
Formaldehyde	50000	2.05E-02	1.47E-01	6.46E-01
Methanol	67561	3.06E-03	2.20E-02	9.64E-02
Methylene Chloride	75092	4.12E-05	2.96E-04	1.30E-03
Naphthalene	91203	9.71E-05	6.98E-04	3.06E-03
PAH	NA	1.41E-04	1.01E-03	4.44E-03
Styrene	100425	1.19E-05	8.56E-05	3.75E-04
Toluene	108883	5.58E-04	4.01E-03	1.76E-02
Vinyl Chloride	75014	7.18E-06	5.16E-05	2.26E-04
Xylene	1330207	1.94E-04	1.40E-03	6.11E-03
Total HAP		**0.03**	**0.23**	**1.02**

[e] AP-42 Table 3.2-3 "Uncontrolled Emission Factors for 4-Stroke Rich Burn Engines" (7/00).

[f] Emission Rate (lb/hr) =
(Emission Factor, lb/MMBtu) * (Rated Horsepower, hp) * (Heat Rate, Btu/bhp-hr) * (MM/1,000,000)

[g] Emission Rate (ton/yr) = (Emission Rate, lb/hr) * (Annual Hours of Operation, hrs/yr) * (1 ton/2000 lb)

TITLE V RENEWAL
Great Lakes Gas Transmission LP
Deer River Compressor Station No. 4 (CS4)

Potential Greenhouse Gas (GHG) Calculated Emissions:

Pollutant	Uncontrolled Emission Factor[2]	Factor Units[2]	Emissions (lb/hr)[1]	Emissions (TPY)	Global Warming Potential (GWP)[2]	CO2e Emissions (lb/hr)	CO2e Emissions (TPY)
CO_2	53.06	kg CO_2/MMBtu	841.30	3684.90	1	841.30	3684.90
CH_4	0.001	kg CH_4/MMBtu	0.02	0.07	25	0.40	1.74
N_2O	0.0001	kg N_2O/MMBtu	0.00	0.01	298	0.47	2.07
TOTAL GHGs	--	--	**841.32**	**3684.97**	--	--	--
TOTAL GHGs (CO_2e)	--	--	--	--	--	**842.17**	**3688.70**

[1] Heat input based on heat rate and permitted HP.

[2] Based on 40 CFR 98 Subpart C, 98.33(a)(1)(i), Tier 1 Methodology, Equation C-1 and using source specific heat input.

GHG Emissions (lb/hr) = EF_{GHG} (kg/MMBtu) * 2.204623 lb/kg * Source Specific Heat Input (MMbtu/hr)

GHG Emissions (TPY) = GHG Emissions (lb/hr) * Annual Operating Hours (hr/yr) * 1 Ton/2000 lb

CO_2e Emissions (TPY) = Σ (GHG Emissions (tpy) * GWP)

Where:

EF_{GHG} = Fuel-specific default CO_2, CH_4, or N_2O emission factors from Table C-1 for CO_2 (Natural gas - Weighted U.S. Average) and Table C-2 for CH_4 and N_2O (Natural Gas) of 40 CFR Part 98, Subpart C (kg/MMBtu)

Heat Input = Btu/hp-hr x Site-rated hp x (1 MMBtu/1,000,000 Btu) = MMBtu/hr

GWP = Global Warming Potentials, 40 CFR 98, Subpart A, Table A-1

Appendix B

FERC Gas Tariff

FERC Gas Tariff

Third Revised Volume No. 1

of

GREAT LAKES GAS TRANSMISSION LIMITED PARTNERSHIP

Filed with

Federal Energy Regulatory Commission

Communications Covering This Tariff Should be Addressed to:

Joan Collins
Manager, Tariffs and Compliance
Great Lakes Gas Transmission Limited Partnership
Mailing Address: P.O. Box 2446
Houston, TX 77252-2446
Courier Address: 700 Louisiana Street, Suite 700
Houston, TX 77002-2700
Phone: (832) 320-5651
Fax: (832) 320-6651

6.8 QUALITY

1. Heating Value. Gas delivered by Shipper to Transporter at each point of receipt shall have a heating value not greater than 1069 BTUs per cubic foot nor less than 967 BTUs. Transporter shall have the right to waive such Btu content limits if, in Transporter's sole opinion, Transporter is able to accept gas with a Btu content outside such limits without affecting Transporter's operations. The heating value shall be determined at intervals of not more than thirty (30) Days by means of an instrument(s) of standard manufacture accepted in the industry for this purpose or using a sample of gas representative of the gas stream that is being delivered to Transporter or received from Transporter at the point(s) of receipt or delivery.

   In the event, however, that the heating value of Gas received by Transporter at any point drops below 1013 Btu, which is the Btu level at which the MDQs of Service Agreements are currently based and Transporter is unable to Transport a Shipper's Scheduled Daily Delivery due to the drop in the Btu level, Transporter shall utilize the Curtailment provision of Section 6.11.4 of the General Terms and Conditions, but only for those Shippers from whom Transporter receives Gas at that point.

   For the purpose of calculating receipts and deliveries, the heating value of the gas so determined at each such point shall be deemed to remain constant at such point until the next determination.

2. Freedom from Objectionable Odor and Matter

   The gas received and delivered hereunder:

   (a) shall be commercially free (at prevailing pressure and temperature) from objectionable odors, dust, or other solid or liquid matter that might interfere with its merchantability or cause injury to or interference with proper operation of the lines, regulators, meters and other equipment of Transporter;

   (b) shall not contain more than one quarter (1/4) grain of hydrogen sulfide per one hundred (100) cubic feet of gas;

   (c) shall not contain more than twenty (20) grains of total sulfur (including the sulfur in any hydrogen sulfide and mercaptans) per one hundred (100) cubic feet of gas;

   (d) shall not at any time have an oxygen content in excess of one percent (1%) by volume and the parties shall make every reasonable effort to keep the gas free of oxygen;

   (e) shall not contain as nearly as practicable any free water nor contain more than

four (4) pounds of water vapor per million cubic feet of gas;

(f) shall not contain more than two percent (2%) by volume of carbon dioxide;

(g) shall be at a temperature not in excess of one hundred twenty degrees (120°) Fahrenheit or less than twenty degrees (20°) Fahrenheit; and

(h) shall not contain more than three percent (3%) by volume of nitrogen.

3. Failure to Meet Specifications. Should any gas tendered for delivery by Shipper fail at any time to conform to any of the specifications of this section, Transporter shall notify Shipper of the failure and Transporter may suspend all or a portion of the receipt of any such gas if it will jeopardize operation of Transporter's system or will cause Transporter to suffer an economic loss; and Transporter shall be relieved of all obligations for the duration of such time as the gas does not meet the specifications; provided however that Transporter shall have the right to waive the specifications set forth in this section if, in Transporter’s sole opinion, Transporter is able to accept such non-conforming gas without adversely affecting Transporter’s operations.

4. Commingling. It is recognized that gas delivered by Shipper will be commingled with other gas transported by Transporter. Accordingly, the gas of Shipper shall be subject to such changes in heat content as may result from such commingling and Transporter shall, notwithstanding any other provision in this FERC Gas Tariff, Third Revised Volume No. 1, herein, be under no obligation to redeliver for Shipper's account, gas of a heat content identical to that caused to be delivered by Shipper to Transporter.

Appendix C

EU 003 Engine Maintenance Records

TOP Contact: Chris Waltman

Instructions:

1. This form is to be completed in conjunction with the TOP entitled RICE MACT Maintenance (EDMS No. 008029868)
2. Save this form using the following naming convention:
   - **Task Title_CMMS Facility ID_yyyy_mm. doc'** (e.g. RICE MACT Maintenance_00005_2014_07.doc').
   - Attach completed form to SAP Work Order Refer to IPSECA (Identify Plan Schedule Execute Close Analyze) Work Management Quick Reference Guide Page 88
3. For information on filing and the onsite/offsite retention requirements, please refer to the 'TransCanada Facility Filing Structure Reference' compliance list (EDMS No. 003794696).

Facility:	**Engine S/N:**
Engine Type:	

Activity	Date Completed	Technician	Remarks/ Deficiencies:
Spark Plug Inspection (Natural Gas or Propane-Fired Engines)	01/24/2019	Nick Mason	Plugs in Good Condition. Plug gap set correctly
Air Cleaner Inspection (Diesel-Fired Engines)	01/24/2019	Nick Mason	Air Filters were in good condition
Belts and Hoses Inspection	01/24/2019	Nick Mason	Hoses in good condition. Belts for outdoor radiator are weather checked and will require replacement. Notification to follow
Oil Sample Taken*	01/24/2019	Nick Mason	Oil Sample sent in for analysis
Oil Changed*	NA		

*An oil sample should be sent for analysis or changed.

Customer Information

TC ENERGY - GLGT PIPELINE
0

, T5M 2Z4
Attention : HUE ONG
Phone : (780) 453-4213
Fax : (780) 453-4185 FAX

Equipment Information

Unit # : CS#04 DEER RIVER RICE MACT APU
Component : RICE MACT APU
Location : AUXILLARY
Unit Mfr/Model :
Unit Serial # :
Comp Mfr/Model : L36GL
Comp Serial # : C-12221/1
Site Location : GREAT LAKES; RICE MACT

Lubricant

Manufacturer : MOBIL
Brand : PEGASUS 710
Grade : 40
SAP WO# :
Sample ID :

FLUID LIFE
EQUIPMENT RELIABILITY SERVICES

Oil Analysis

Suite 210, 9555 James Ave. S., Bloomington
Minnesota 55431, USA
Phone: 877 962 2400

Sample		Contaminants (ppm)			Wear Metals (ppm)												Additives (ppm)							
Sample Number	Sample Date	Sodium	Potassium	Silicon	Aluminum	Iron	Copper	Lead	Tin	Chromium	Nickel	Titanium	Silver	Vanadium	Antimony	Beryllium	Calcium	Zinc	Phosphorus	Magnesium	Molybdenum	Boron	Barium	Lithium
Ref. Sample	2019/03/04	0	0	12	0	2	0	0	0	0	0	0	0	0	1	0	2550	242	214	9	1	1	0	0
01/10-520	2020/01/02	1	0	3	0	2	1	0	0	0	0	0	0	0	0	0	2310	277	266	8	0	1	0	0
01/28-082	2019/01/16	3	0	3	0	2	0	0	0	0	0	0	0	0	0	0	2240	275	243	7	0	1	0	0
03/12-270	2018/03/06	1	0	1	0	1	0	2	0	0	0	0	0	0	0	0	2340	274	248	6	1	0	0	0
02/08-220	2017/02/03	1	0	3	0	2	0	1	0	0	0	0	0	0	1	0	2250	266	249	8	0	0	0	0
01/25-314	2016/01/15	1	0	2	0	2	1	1	1	0	0	0	0	0	1	0	1440	288	269	8	0	0	0	0
02/05-254	2015/01/29	1	0	2	0	2	0	0	0	0	1	0	0	0	0	0	1600	323	299	7	1	1	0	0

Sample Information

Sample Date	Oil Mfr.	Oil Brand	Oil Grade	Comp. Service	Oil Service	Units	Oil Chg
Ref. Sample	MOB	PEG710	40				
2020/01/02	MOB	PEG710	40	~131579		HR	N
2019/01/16	MOB	PEG710	40	13145		HR	N
2018/03/06	MOB	PEG710	40	13137		HR	N
2017/02/03	MOB	PEG710	40	13121		HR	Y
2016/01/15	MOB	PEG710	40	13092		HR	N
2015/01/29	MOB	PEG710	40	?		HR	N

Physical Tests

Sample Date	Visc 40°C cSt	Visc 100°C cSt	Visc Index	Water (ppm)	NIT (A/cm)	OX (A/cm)	Sul (A/cm)
Ref. Sample	121	12.78	98	26	<0.10	<0.10	<0.10
2020/01/02	125	13.27	101	132	5.75	5.60	1.14
2019/01/16	125	13.11	98	127	1.24	2.84	<0.10
2018/03/06	123	13.01	98	150	1.11	2.77	<0.10
2017/02/03	124	13.44	103	138	0.12	2.41	<0.10
2016/01/15	134	13.65	97	61	1.31	5.04	<0.10
2015/01/29	131	12.90	90	20	8.53	18.6	1.50

Additional Tests

Continued on other side...

Sample Date	TAN (mgKOH/g)	ISO Method	ISO Code	ISO 4u Count	ISO 6u Count
Ref. Sample	1.50	ISO	19/17/13	2640	800
2020/01/02	1.72	ISO	26/22/14	402328	25875
2019/01/16	1.62	ISO	23/19/12	58000	3860
2018/03/06	1.50	ISO	24/20/15	118150	8330
2017/02/03	1.58	ISO	22/20/15	32655	5419
2016/01/15	1.37	ISO	24/23/17R	147877	49155
2015/01/29	1.24	ISO	21/18/14	14877	1391

Results

2016/01/15 Note ISO Count.
ISO results were checked
Some tests have been performed at another Fluid Life lab. If you have any questions, please call the lab.

Recommendations

2020/01/02 Notes: All tests performed were within RICE MACT specifications. Oil baseline (2019/03/04): TAN - 1.50

2019/01/16 Notes: All tests performed were within RICE MACT specifications. Oil baseline 2016/04/06: TAN 1.60

2018/03/06 Notes: All tests performed were within RICE MACT specifications.

2017/02/03 Notes: All tests performed were within RICE MACT specifications. Oil baseline 2016/04/06: TAN 1.60

2016/01/15 Notes: All tests performed were within specification. Oil baseline 201604/06: TAN 1.60

2015/01/29 Notes: All tests performed were within ANR specifications. TH

Key: Y - Yes N - Negative P - Positive R - Reportable U - Unacceptable S - Severe I - Insufficient Sample > - More Than < - Less Than NT - Not Triggered ◢ - Updated ~ - Lab Estimated

Customer Information

TC ENERGY - GLGT PIPELINE
0

, T5M 2Z4
Attention : HUE ONG
Phone : (780) 453-4213
Fax : (780) 453-4185 FAX

Equipment Information

Unit # : CS#04 DEER RIVER RICE MACT APU
Component : RICE MACT APU
Location : AUXILLARY
Unit Mfr/Model :
Unit Serial # :
Comp Mfr/Model : L36GL
Comp Serial # : C-12221/1
Site Location : GREAT LAKES; RICE MACT

Lubricant

Manufacturer : MOBIL
Brand : PEGASUS 710
Grade : 40
SAP WO# :
Sample ID :

FLUID LIFE
EQUIPMENT RELIABILITY SERVICES

Trend Analysis

Suite 210, 9555 James Ave. S., Bloomington
Minnesota 55431, USA
Phone: 877 962 2400

Additional Tests

ISO 14u Count

60
115
30
210
262
1100R
105

Customer Information

TC ENERGY - GLGT PIPELINE
0

, T5M 2Z4
Attention : HUE ONG
Phone : (780) 453-4213
Fax : (780) 453-4185 FAX

Equipment Information

Unit # : CS#04 DEER RIVER RICE MACT APU
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Lubricant

Manufacturer : MOBIL
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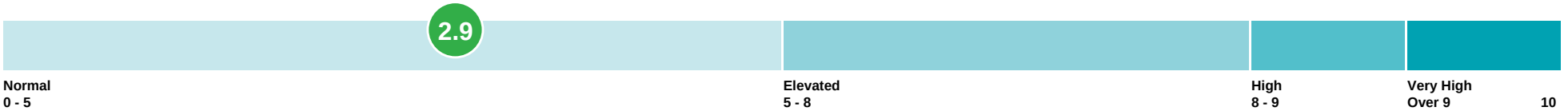
Grade : 40
SAP WO# :
Sample ID :

FLUID LIFE
EQUIPMENT RELIABILITY SERVICES

Trend Analysis

Suite 210, 9555 James Ave. S., Bloomington
Minnesota 55431, USA
Phone: 877 962 2400

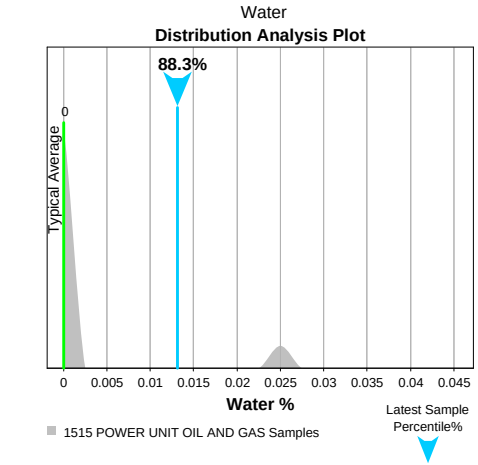
Your Sample Rank

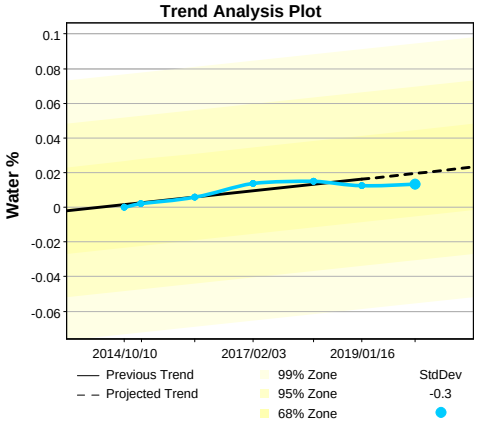


Sample rank ranges from zero to ten. The higher the sample rank, the more abnormal the sample results are.

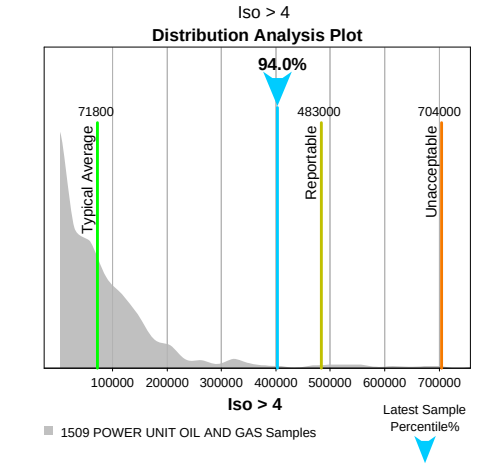
Top Trends Analysis

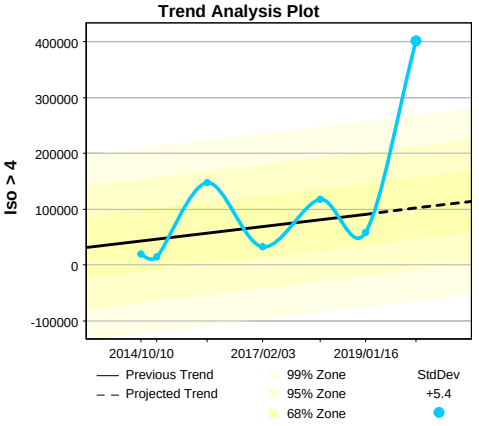
Water Test Rank 6.8



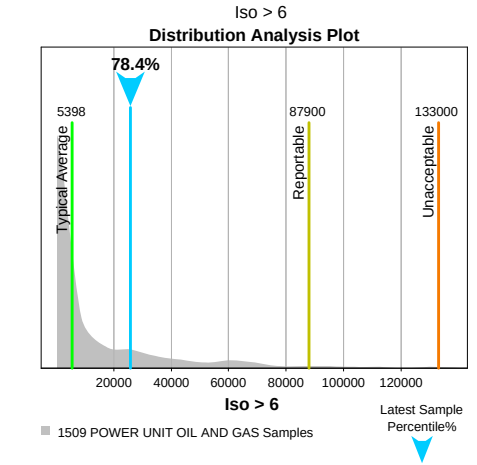


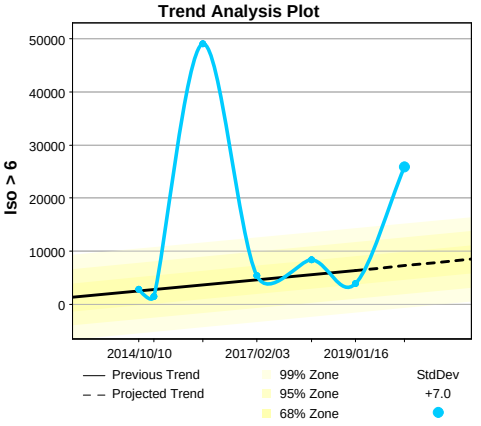
Iso > 4 Test Rank 6.7





Iso > 6 Test Rank 6.4

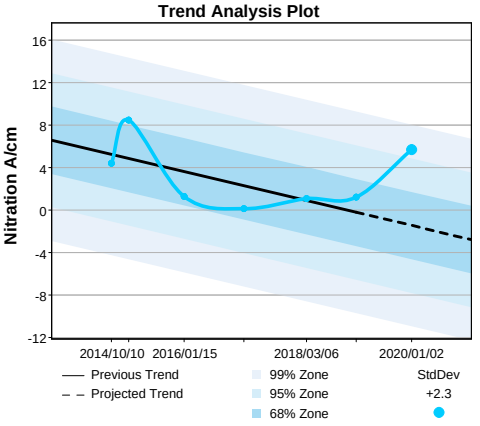




Nitration Test Rank 2.5

Nitration

No distribution analysis available.



Appendix D

2018 Actual Emissions of Criteria and Hazardous Air Pollutants

Great Lakes Gas Transmission
Deer River Compressor Station 4

	401	402	EU 003	TOTAL
CO	*32.2*	*1.1*	*0.3*	***33.6***
NOx	13.4	26.5	0.0	**39.9**
PM	0.4	0.3	0.0	**0.7**
SOx	0.0	0.0	0.0	**0.1**
VOC	0.1	0.1	0.0	**0.2**
HAPs	0.1	0.4	0.0	**0.5**
TOTAL	**14.0**	**26.9**	**0.3**	**40.9**

2018 Chargeable Emissions	**41.0**
Cost per ton[1]	**$52.81**
2018 Fee	**$2,165.21**

CO: Exempt from Fee Payment

[1] Cost per ton based on: https://www.epa.gov/title-v-operating-permits/historical-permit-fee-rates.

Great Lakes Gas Transmission
Deer River Compressor Station 4

Unit	Manufacturer	Model	Fuel Usage (MMcf/yr)
Unit 401	ROLLS ROYCE	AVON	128.143
Unit 402	GENERAL ELECTRIC	LM 1600	94.200
EU 003	WAUKESHA	L36GL	0.150

Emission Factors to be used for reporting for engines

Unit	NO_X (lb/MMscf)	CO (lb/MMscf)	VOC (lb/MMscf)	PM (lb/MMscf)	SO_2 (lb/MMscf)
Unit 401	209.100	502.860	2.142	6.732	0.600
Unit 402	563.040	23.460	2.142	6.732	0.600
EU 003	585.480	3794.400	30.192	19.798	0.600

	Unit 401	Unit 402	EU 003
NO_X	March 29, 2005 stack test. Stack test report submitted to EPA May 11, 2005.	Emissions Test 12/02/2015; g/hp-hr calculated based on Fuel Flow (scfh) from stack test (102,603 scfh)	specifications: 2.0 gm/hp-hr18000 btu/hp-hr 1435.6 gmab x 1,000,000 btu/MMBtu = 0.574 lb/MMBtu x 1020 MMBtu/MMCF
CO	March 29, 2005 stack test. Stack test report submitted to EPA May 11, 2005.	Emissions Test 12/02/2015; g/hp-hr calculated based on Fuel Flow (scfh) from stack test (102,603 scfh)	July 2000 EPA AP-42 Table 3.2-3 (3.72 lb/MMBtu)(1020 MMBtu/MMCF)= 3749.4 lb/MMCF
VOC	April 2000 EPA AP-42 Table 3.1-2a, Supplement F. (0.0021 lb/MMBtu)(1020 MMBtu/MMCF)= 2.142 lb/MMCF	April 2000 EPA AP-42 Table 3.1-2a, Supplement F. (0.0021 lb/MMBtu)(1020 MMBtu/MMCF)= 2.142 lb/MMCF	July 2000 EPA AP-42 Table 3.2-3 (0.0296 lb/MMBtu)(1020 MMBtu/MMCF)= 30.19 lb/MMCF
PM	PM Total from April 2000 AP-42, Table 3.1-2a, Supplement F. (0.0066 lb/MMBtu)(1020 MMBtu/MMCF) = 6.732 lb/MMCF.	PM Total from April 2000 AP-42, Table 3.1-2a, Supplement F. (0.0066 lb/MMBtu)(1020 MMBtu/MMCF) = 6.732 lb/MMCF.	July 2000 EPA AP-42 Table 3.2-3 (0.0095 lb/MMBtu+0.00991 lb/MMBtu)(1020 MMBtu/MMCF)= 19.8 lb/MMCF
SO_2	Based on a max. value of 0.205 gr/100 scf from TGP	Based on a max. value of 0.205 gr/100 scf from TGP	July 2000 EPA AP-42 Table 3.2-3 (0.000588 lb/MMBtu)(1020 MMBtu/MMCF)= 3749.4 lb/MMCF

DEER RIVER STATION # 4
EMISSION ESTIMATES
2018

Operator ID	Emission Unit Description	Annual Operating Hours	Days Operated per Year	Actual Gas Usage (MMscf)	Annual Tank Thruput (1000 gal)	NOx Emission Factor (lb/MMscf)	CO Emission Factor (lb/MMscf)	VOC Emission Factor (lb/MMscf or lb/1000 gal	Ammonia Emission Factor (lb/MMscf)	PM10 Emission Factor (lb/MMscf)	SOx Emission Factor (lb/MMscf)	NOx Emissions (lbs/yr)	CO Emissions (lbs/yr)	VOC Emissions (lbs/yr)	Ammonia Emissions (lbs/yr)	PM10 Emissions (lbs/yr)	SOx Emissions (lbs/yr)	NOx Emissions (tpy)	CO Emissions (tpy)	VOC Emissions (tpy)	Ammonia Emissions (tpy)	PM10 Emissions (tpy)	SOx Emissions (tpy)
UNIT401	Rolls Royce Avon Turbine	910	38	128.14	--	See attached tables for EF information						26794.68	64437.94	274.48	--	862.66	76.89	13.40	32.22	0.14	--	0.43	0.04
UNIT402	GE LM1600 Turbine	1,020	42	94.20	--							53038.10	2209.92	201.78	--	634.15	56.52	26.52	1.10	0.10	--	0.32	0.03
EU 003	Waukesha	10	0	0.07								87.62	567.82	4.52	--	2.96	0.09	0.04	0.28	0.00	--	0.00	0.00
											Total	**79920.39**	**67215.68**	**480.78**	**0.00**	**1499.77**	**133.50**	**39.96**	**33.61**	**0.24**	**0.00**	**0.75**	**0.07**

Emissions Calculated as follows:

Emergency Generator: Fuel use based off of hours of operation.

Engines: (Actual Annual Gas Usage, MMscf) * (Emission Factor, lb/MMscf) = Emissions, lbs/yr)

TOTAL FACILITY HAP EMISSIONS

HAP	Emission Rate (tpy)
Acetaldehyde	0.0
Acrolein	0.0
1,3-Butadiene	0.0
Benzene	0.0
Ethylbenzene	0.0
Formaldehyde	0.1
Naphthalene	0.0
PAH	0.0
Propylene Oxide	0.0
Toluene	0.0
Xylene	0.0
Total (lb/yr) =	**234.132**
Total (tons/year) =	**0.117**

UNIT 1 - TURBINE[a]

HAP	Emission Factor (lb/MMBTU)	Emission Rate (lb/hr)	Emission Rate (tpy)
Acetaldehyde	4.00E-05	5.75E-03	0.00
Acrolein	6.40E-06	9.19E-04	0.00
1,3-Butadiene	4.30E-07	6.18E-05	0.00
Benzene	1.20E-05	1.72E-03	0.00
Ethylbenzene	3.20E-05	4.60E-03	0.00
Formaldehyde	7.10E-04	1.02E-01	0.05
Naphthalene	1.30E-06	1.87E-04	0.00
PAH	2.20E-06	3.16E-04	0.00
Propylene Oxide	2.90E-05	4.17E-03	0.00
Toluene	1.30E-04	1.87E-02	0.01
Xylene	6.40E-05	9.19E-03	0.00
	Total (tons/year) =		**0.06**

UNIT 2 - TURBINE[a]

HAP	Emission Factor (lb/MMBTU)	Emission Rate (lb/hr)	Emission Rate (tpy)
Acetaldehyde	4.00E-05	3.77E-03	0.00
Acrolein	6.40E-06	6.03E-04	0.00
1,3-Butadiene	4.30E-07	4.05E-05	0.00
Benzene	1.20E-05	1.13E-03	0.00
Ethylbenzene	3.20E-05	3.02E-03	0.00
Formaldehyde	7.10E-04	6.69E-02	0.03
Naphthalene	1.30E-06	1.22E-04	0.00
PAH	2.20E-06	2.07E-04	0.00
Propylene Oxide	2.90E-05	2.73E-03	0.00
Toluene	1.30E-04	1.22E-02	0.01
Xylene	6.40E-05	6.03E-03	0.00
	Total (tons/year) =		**0.05**

UNIT 3- EMERGENCY GENERATOR[b]

HAP	Emission Factor (lb/MMBTU)	Emission Rate (lb/hr)	Emission Rate (tpy)
1,1,2,2-Tetrachloroethane	2.53E-05	9.93E-05	0.00
1,1,2-Trichloroethane	1.53E-05	6.00E-05	0.00
1,3-Butadiene	6.63E-04	2.60E-03	0.00
1,3-Dichloropropene	1.27E-05	4.98E-05	0.00
2,2,4-Trimethylpentane	0.00E+00	0.00E+00	0.00
2-Methylnaphthalene	0.00E+00	0.00E+00	0.00
Acenaphthene	0.00E+00	0.00E+00	0.00
Acenaphthylene	0.00E+00	0.00E+00	0.00
Acetaldehyde	2.79E-03	1.09E-02	0.00
Acrolein	2.63E-03	1.03E-02	0.00
Benzene	1.58E-03	6.20E-03	0.00
Benzo(a)pyrene	0.00E+00	0.00E+00	0.00
Benzo(b)fluoranthene	0.00E+00	0.00E+00	0.00
Benzo(e)pyrene	0.00E+00	0.00E+00	0.00
Benzo(g,h,i)perylene	0.00E+00	0.00E+00	0.00
Benzo(k)fluoranthene	0.00E+00	0.00E+00	0.00
Biphenyl	0.00E+00	0.00E+00	0.00
Carbon Tetrachloride	1.77E-05	6.95E-05	0.00
Chlorobenzene	1.29E-05	5.06E-05	0.00
Chloroform	1.37E-05	5.38E-05	0.00
Chrysene	0.00E+00	0.00E+00	0.00
Ethylbenzene	2.48E-05	9.73E-05	0.00
Ethylene Dibromide	2.13E-05	8.36E-05	0.00
Fluoranthene	0.00E+00	0.00E+00	0.00
Fluorene	0.00E+00	0.00E+00	0.00
Formaldehyde	2.05E-02	8.04E-02	0.00
Indeno(1,2,3-c,d)pyrene	0.00E+00	0.00E+00	0.00
Methanol	3.06E-03	1.20E-02	0.00
Methylene Chloride	4.12E-05	1.62E-04	0.00
n-Hexane	0.00E+00	0.00E+00	0.00
Naphthalene	9.71E-05	3.81E-04	0.00
PAH	1.41E-04	5.53E-04	0.00
Perylene	0.00E+00	0.00E+00	0.00
Phenanthrene	0.00E+00	0.00E+00	0.00
Phenol	0.00E+00	0.00E+00	0.00
Pyrene	0.00E+00	0.00E+00	0.00
Propylene Oxide	0.00E+00	0.00E+00	0.00
Styrene	1.19E-05	4.67E-05	0.00
Toluene	5.58E-04	2.19E-03	0.00
Vinyl Chloride	7.18E-06	2.82E-05	0.00
Xylene	1.94E-04	7.61E-04	0.00
	Total (tons/year) =		**0.00**

NOTES:

[a]HAP emission factors derived from AP-42 Table 3.1-3 (Turbines)

[b]HAP emission factors derived from AP-42 Table 3.2-3 (4-Stroke Rich-Burn Engines)

Calculations are rounded up to the nearest tenth of a ton and only emissions >0.1 tpy for a single HAP are reported

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Exceptional outcomes.